

THE FOURTH NATIONAL FORMULARY.

BY WILBUR L. SCOVILLE.

The new National Formulary, like Cæsar's "all Gaul," is divided into three parts. This is also an imitation of the earliest U. S. Pharmacopœia, which found the arrangement of the formulas in alphabetical order by themselves, followed by the materia medica, and lastly by the reagents and tests, the best plan. They too put the formulas first, and the materials which composed them followed after.

Part I of the Formulary is the part which corresponds to the old preceding editions; and is still the main part of the book. The principal work of the National Formulary Committee has been applied to this part.

It is preceded by a historical chapter and preface, a list of additions, deletions and changed titles, a chapter on sterilization, and some preliminary notices. These summarize the changes so far as titles are concerned, but do not suggest the changes in the formulas themselves, which are important.

There are twelve introductory paragraphs or chapters in Part I, which describe twelve classes of the preparations and introduce each. These twelve titles are the only ones which do not apply directly to specific preparations. Some of the important changes in preparations may be classified as follows:

Elixirs.—Seventy-nine are now official, which is a small decrease in number. Most of the older formulas remain unchanged, but three new basic elixirs have been introduced,—Compound Elixir of Almond, Compound Elixir of Cardamom, and Compound Elixir of Vanillin. These are especially designed for elixirs of low alcoholic strength, and contain but 5 to 10 percent of alcohol. The Bromide elixirs have been reduced in alcoholic strength, also a few others, but it was thought wise to allow the flavor of these to remain the same as before. That "bone of contention," Compound Digestive Elixir, has been allowed to sink into "innocuous desuetude"; saccharin is used less freely than before, but still enters into a few preparations. The list is thirteen less than the N.F. III contained, which looks "unlucky" for some elixirs. It is still the second largest class in the book, and can afford to lose some of its members. The Harrison Law induced a slight change in Elixir Terpin Hydrate with Diacetyl-Morphine, the content of the latter being decreased.

Emulsions are also slightly decreased in numbers, but are improved in formulas; eight are now official, including two taken from the U.S.P. VIII.

Emplastra (plasters) are disappearing from professional pharmacy, and the N.F. has allowed twelve to "come off" and has added only one, out of compliment to the U.S.P.

Extracts.—Eight have been added (six from the U.S.P.) and seven dismissed, and standards with assay processes have been added to extracts of Cinchona, Conium, and Ignatia. Pharmacists should note these standards and see that their stock conforms.

The Fluidextracts are now the largest class of preparations in the Formulary, comprising 90 titles, of which 50 were added, and 30 of these were taken from the U.S.P.

The last N.F. Revision Committee has not, however, honored the tradition "When the Pharmacopœia forsakes thee, then the National Formulary will take thee up," but has said, "No! No!" to a number of preparations which the Pharmacopœia has dropped.

The National Formulary has come to a more discriminating age, and is no longer content to wear everything that U.S.P. casts off. For instance, no Coca preparations are now official in either book, because these have all proved unworthy of confidence, being so unstable that no standard can be maintained. The *Viburnum Opulus* of the N.F. IV is a different drug from the *Viburnum Opulus* of the U. S. P. VIII, and its preparations must conform to the new standards. And when the U.S.P. Committee decided that the available formulas for elixir of the phosphates of iron, quinine and strychnine were all unsatisfactory, and the preparation was dismissed from the Pharmacopœia, the N.F. decided not to be "the goat" and did not swallow the discarded can. So, while the N. F. did take up a large number of preparations which the U.S.P. discarded, those which were adopted are sound pharmaceutically, and are in active demand.

Standards and assay processes are included for fluidextracts of *Cinchona* (aqueous), *Colchicum Corm*, *Conium*, and *Stramonium*. These are in accord with previous standards, but pharmacists should note that they still hold, legally, and see to it that their stock conforms.

The *Fluidglycerates* are officially introduced to American Pharmacy by a short chapter on their character and uses, and five typical preparations. Whether this class shall increase or decrease in future editions will depend upon the success which these may meet.

Glycerite of Bismuth now leads the four preparations in this class, and is standardized. This preparation is very liable to vary in manufacture, and the standard is needed to secure uniformity.

The *Concentrated Infusion of Gentian Compound*, which was more properly a tincture, has now been compromised with the title "*Infusum Gentianæ Compositum*," wherein the original tincture infusion is directed to be made and then diluted with water. The "then" may cover an unlimited period of time, and the tincture can be prepared in any desired quantity, to be stored and await the time of dilution. But the title still remains "*Infusum*," etc.

Liniments.—These have disappeared and no new ones have come, but the

Liquors have changed considerably. Fifteen have been dropped and eleven added, making a net loss of four. Among the new ones is *Liquor Alumini Acetatis*, which is an old title but a new preparation. This is Burow's Solution and a true aluminum acetate, while the solution formerly official under this title is now correctly recognized as *Liquor Alumini Subacetatis*. Some confusion is liable to result in this change, and pharmacists should be careful in supplying the article desired.

Changes will be found in the formulas for the antiseptic solutions and several of the iron solutions, and assay processes are appended to some of the latter. Next to the Fluidextracts the Solutions will show more changes than in any class of preparations.

Mixtures are increased by two and decreased by five, twenty remaining. This class shows few changes in the formulas, but some changes in titles which are important.

Mulla are new as a word, but old as a class. The former title *Unguenta Extensa* is too cumbersome, and the simple title *Mulla* it is thought will prove much more satisfactory. The same five are official, and are now more easily classified.

Nebula or sprays are a new class to the N.F. Five formulas for this popular form of medication are now included, and these should prove useful in practice.

Oil-sprays are growing in service, and *Spirits* are increased by four, and decreased by nine, leaving nine official. The old *Spiritus Cardamomi Compositus*,

which was designed to produce an oil-solution in imitation of Tincture of Cardamom Compound, has been displaced by a totally different Spiritus Cardamomi Compositus, which is much stronger and of very different composition. The latter is used to make the new Compound Elixir of Cardamom. This is another change which is liable to cause some confusion for a time.

Compound Spirit of Vanillin is likewise introduced as a component for the preparation of the Elixir Vanillin Compound.

Syrups have won a dead heat in adding nine and dropping nine, so the number remains, as before, 44. Five of the new syrups are taken from the U. S. P. VIII and the others include syrup of Ammonium Hypophosphite, Compound Syrup of Figs, Syrup of Iodotannin and Syrup of Blackberries.

Tinctures have gained five in adding eighteen and dropping thirteen. Among the additions are Tincture of Cactus Grandiflorus, which is made from the fresh drug, Tincture of Caramel, which is designed to produce more uniform coloring when caramel is used in small quantities, and Crocated Tincture of Opium, which is a standardized and assayed preparation uniform in strength with the opium tinctures of the U.S.P. IX.

Antiperiodic Tincture (Warburg's Tincture) is now under two titles, the second calling for Antiperiodic Tincture without Aloes, so there can be no mistake when Warburg's Tincture is called for.

Tincture of Citrochloride of Iron now contains considerably more sodium citrate, and a green tincture is always assured.

Tincture of Ignatia has a standard of 0.2 percent of alkaloids. Compound Tincture of Viburnum is now made from high bush cranberry bark, and not from what is sold as cramp bark.

Troches have also split even in dropping eight titles and adding eight. The troches which remain have all been improved, so that more satisfactory results may be expected from these preparations. Here the changes will be found mostly in the formulas.

Ointments show little change in composition or number, four having been added (from the U.S.P. VIII) and three dismissed.

Wines are given a last stand in the N.F. The Pharmacopœia has dropped them all, and the N.F. has taken up the more important of those in use. Two wines of Colchicum and Wine of Ipecac are standardized and assay processes are included. Wines are a passing class of pharmaceuticals, but are likely to linger for some time yet. Look out for the standards in your stock.

The above indicates in brief the more obvious and important changes in the formulary portion of the National Formulary; Part II comprises the simples which are used in the formulas in Part I and are not official in the U.S.P. IX. No article which is not used in Part I is included in Part II. This part is the work of the Committee on Standards of the American Pharmaceutical Association, and is a new feature of the Formulary. Its purpose is obvious, to provide definitions and standards for all articles used in the Formulary, so that there can be no question as to what is intended in any given case. This brings it nearer to the Pharmacopœia in appearance and style than preceding editions, but there is one very essential difference between the Pharmacopœia and the National Formulary which will keep them distinct and will avoid conflict. The Pharmacopœia is an authority on therapeutics, and its scope is controlled by therapeutic considerations, but the National Formulary does not vouch for any therapeutic efficiency, and recognizes any preparation of pharmaceutical soundness which is used to a marked extent by physicians. The Pharmacopœia is controlled by the "regular" school of

practice, but the National Formulary makes no distinction between allopaths, homeopaths, osteopaths, chiropractors or any other school of practice. Its mission is to perfect or select the pharmaceutical qualities of the formulas, and to allow the physicians as a whole to adjust or judge the therapeutics. Hence there is not likely to develop any rivalry or antagonism between the two books. Since both Parts I and II contain assays and tests which require test solutions and some special test directions, it seemed wise to embody the more special tests in Part III. This is taken directly from the U.S.P. IX, by permission of the Board of Trustees, and is designed to make the Formulary more complete as a working book. Volumetric solutions and the usual test solutions are not included, although employed in N.F. tests, because these are made by standard and well-known methods. Only the special tests are included. This part will doubtless be used more by manufacturers than by retail pharmacists, but the latter should not overlook the fact that the standards of the National Formulary IV apply after September 1, 1916, to all stock sold under the titles therein. Pharmacists should go over their stock, and set aside for readjustment all preparations not conforming to the new standards.

ALCOHOL DETERMINATION BY DISTILLATION.

BY A. B. LYONS.

An official method for the determination of alcohol in pharmaceutical preparations appears in U. S. P. IX and also in N. F. IV. The principle is the familiar one of distilling from an accurately measured volume of the alcoholic liquid, diluted with sufficient water, an equal volume of distillate, the specific gravity of which indicates, by reference to an alcoholometric table, the percent by volume of anhydrous alcohol. It is essential that the measurements before and after distillation shall be made with exactness, and it goes without saying that in all exact measurements of liquids temperature is an important factor.

It has been the common practice to make these measurements at 60° F., the standard temperature for alcohol determinations. The air temperature in most laboratories is many degrees higher than this, the year around, and where the pycnometer is used for determination of the specific gravity, condensation of atmospheric moisture* makes accurate weighing difficult. Hence it has become customary to make the weighing at room temperature, although the measurement has been made at 60° F., the necessary correction being taken from an empirical table, such as is given in U. S. P. IX.

It is simpler to make the measurement also at room temperature, taking care only that this temperature is the same for both the measurements. The principle is sound, and *so long as the volume of the distillate is the same as that of the sample* taken for distillation, the results will be correct, provided the whole of the alcohol passes over by the time this volume is obtained—*i.e.*, in case of a liquid containing not more than 25 percent alcohol.

If this liquid contains more than 25 percent of spirit, it is necessary to carry this distillation further and the common practice has been to bring the volume of the distillate to just double that of the sample distilled. Now, however, we may no longer make our measurements at any but the standard temperature, *viz.*: 60° F. The reason for this is that the coefficient of expansion for mixtures of alcohol and water varies greatly with the proportion of alcohol present, being, for example, four times as great for 95 percent alcohol as for 8 percent. Consequently the error in the first measurement will be materially greater than that of the second if both are made at the same temperature.