Press in order that pharmacists throughout the United States may be given opportunity to register their opinions concerning them. The Committee endeavors to secure the widest possible publicity in this part of the work to the end that pharmacists in all sections of the country may be given an opportunity to express themselves and thereby prevent, as far as possible, unfavorable comment on the completed work.

DELETIONS, CHANGES AND IMPROVEMENTS.

The most radical step taken by the Committee in revising the National Formulary is the deletion of the entire list of medicated wines as a class; three of the more important wines, *viz.*, Antimony, Colchicum Corm and Ipecac are to be replaced by corresponding tinctures; Wine of Beef and Iron will be represented by an elixir.

A Table of U. S. P. and N. F. substances and of the official preparations in which they are contained as active ingredients, will be included. A dose table will be printed in Part III, apart from the preparations and drugs. Assay processes will be given for many of the potent drugs and preparations. The alcoholic content by volume will be stated wherever same is practicable; for each preparation a variable range of alcoholic strength will be given. The volume of alcohol necessary for each preparation is being studied, with a view of using the minimum amount required for permanency, preservation or therapeutic activity of the preparations containing alcohol.

A standard of 12 grains per fluidounce with an acidity of 0.05% HCl or its equivalent of other acids, based on H ion concentration, will be provided for pepsin preparations.

Monographs for liquid preparations of chemicals wherever practicable will be included, giving description of physical properties, identification tests, assays, etc.

Ampuls will be officially recognized and special directions given for proper cleaning and sterilization. The chapter on tablet-making will be limited to their extemporaneous preparation. Troches of Gambir and of Peppermint are in the list of deletions, and the following are to be included as tablets: Charcoal, Phenolphthalein, Quinine Tannate, Santonin, Santonin Compound, Sulphur and Cream Tartar.

Additions or important changes in formulas are to be indicated in the text by some distinctive sign. Preparations employed in veterinary practice and preparations used in dental practice are to be included.

THE NEW ITALIAN PHARMACOPOEIA.*

The Italian pharmacy law of 1913 stipulates that every five years the Minister of the Interior shall cause the official Pharmacopoeia to be revised and a new edition published. The third edition of the Italian Pharmacopoeia was issued in 1909, and in 1914 a commission was appointed for its revision, consisting of Professors E. Paterno, V. Cervello, L. Pesci, and C. Manuelli, three of whom had already figured as the compilers of this work. Later, during the same year, the Commission was strengthened by the appointment of two pharmacists—an innovation—the gentlemen selected being Sig. T. Bosio, President of the Association of Pharmacists of the Province of Turin, and Sig. A. Quercia, President of the Association of Pharmacists of the Province of Bari.

* A review reprinted from *The Chemist and Druggist*, December 31, 1921, pp. 57–60.

Externally, the new edition is a thicker volume than its predecessor, although the number of pages has been increased only from 452 to 524, but it is printed on thicker paper. The size has remained the same—$8^1/_2$ in. by $6^1/_4$ in.

ADDITIONS AND OMISSIONS.

In the new edition twenty-eight articles figuring in that of 1909 have been omitted, *viz.:*

Hydrocyanic acid.
Plain aërated water (CO_2).
Bromine.
Iodoform bougies.
Centaury.
Corrosive sublimate cotton wool.
Decoction of guaiacum wood.
Decoction of pomegranate.
Decoction of taraxacum.
Oil of cajuput.
Extract of centaury.
Extract of juniper.
Extract of guaiacum.
Extract of pomegranate.
Extract of savin.
Extract of taraxacum.
Corrosive sublimate gauze.
Infusion of elder flowers.
Lead iodide.
Solution of mercuric nitrate.
Cod-liver oil with ferrous iodide.
Syrup of anise.
Ammonio-sulphate of copper.
Mercury succinimide.
Taraxacum.
Tincture of saffron.
Antimonial wine.
Saffron.

On the other hand, sixty-three new articles and preparations have been added, and it is interesting to note that of this total no fewer than thirty-three of the additions made take the form of galenical preparations, several of which represent well-known proprietary products, while only seven modern synthetic compounds have been added to the new edition. These additions are as follows (the trademark designation, as it appears in the index, being given in parenthesis):

Silver proteinate (protargol).
Silver in leaves.
Cantharidin.
Kaolin.
Saccharated iron carbonate.
Crude potassium carbonate.
Naphtholated charcoal.
Cardamom seeds.
Caoutchouc.
Keratin.
Para-aminobenzoyl-diethylamino-ethanol hydrochloride (novocain).
Calcium chloride.
Cantharides collodion.
Condurango bark.
Confection of prunes.
Crude cresol.
Solution of cresol with soap.
Decoction of condurango.
Decoction of barley.
Caoutchouc plaster.
Liquid extract of cinchona.
Liquid extract of condurango.
Phenolphthalein.
Silver fluorosilicate.
Gelatin.
Sodium hyposulphite.
Hydrous lanolin.
Mucilages.
Sodium nitrite.
Cod-liver oil with iodine.
Pastes.
Bismuth and magnesia pastilles.
Arsenious anhydride and ferrous lactate pills.
Creosote pills.
Phenolphthalein pills.
Podophyllin and cascara sagrada pills.
Pulp of prunes.
Acetyl-para-amidophenyl salicylate (salophen).
Mercuric salicylate.
Dimethyl-dimethylamido-isopyrazolon salicylate (pyramidon salicylate).
Scammony.
Cinchona and iron syrup.
Syrup of calcium and sodium glycerophosphate.
Compound syrup of hypophosphites.
Syrup of calcium lactophosphate.
Compound syrup of potassium guaiacolsulphonate.
Iodotannic syrup.
Aluminium sulphate.
Dehydrated calcium sulphate.

Potassium guaiacolsulphonate (thiocol).
Guttapercha.
Infusion of marshmallow.
Infusion of chamomile.
Infusion of mallow.
Infusion of salep.
Infusion of senna.
Albumin tannate (tannalbin).
Tincture of adonis.
Compound tincture of jalap.
Tincture of henbane.
Benzoated tincture of opium.
Traumaticin.
Tribromophenolate of bismuth (xeroform).

STANDARDIZING DROPS.

Among the notes which precede the text of the Pharmacopoeia the following are of interest:

Heroic drugs have to be powdered in their entirety, without leaving any portion. All drops have to be measured by means of the normal dropper decided upon at the Brussels Conference (compare B. P., page xi). This provision, which has been adopted in all recent Pharmacopoeias, is important, since it must be borne in mind that Continental pharmacy does not possess a unit corresponding to the British minim, and it is not customary to prescribe liquids to be taken in fractions of a cubic centimeter. The great difference which exists between an ordinary drop, or even a minim, and the normal drop—a difference which is fraught with serious consequences in the case of solutions of powerful drugs—is best illustrated by taking a practical example. One cubic centimeter approximates 17 minims, but while 1 cc of distilled water is equivalent to 20 normal drops, 1 cc of tincture of strophanthus represents no less than 50 normal drops, a point which must be borne in mind when dispensing foreign prescriptions, for in this instance, to dispense on a prescription including "tinct. strophanth. gtt. L." 50 minims of tincture would be giving three times the amount actually intended by the prescriber. The whole question of drops has, in fact, been rendered still more confused by the introduction of the normal dropper, at least until it is universally adopted by all prescribers, since the difference between what is commonly understood as a "drop" and the "normal drop" is very great in a large number of instances, and may give rise to serious divergences.

RULES FOR STERILIZATION.

In the preface to the new Italian Pharmacopoeia precise rules for sterilization have been included, which are deserving of interest, particularly in view of the extension of hypodermic medication. All solutions for hypodermic or intravenous administration have to be sterilized, whether this is specially indicated or not. The recipients and apparatus used are to be sterilized at a temperature of 160° for half an hour, or one hour in an air-bath, or by means of steam in an autoclave at 115° for half an hour. This method is to be adopted in the case of substances which do not decompose at this temperature, *e. g.*, stovain, gelatin, caffeine, physiological salt solution, etc.

In the case of solutions of substances which undergo decomposition at this temperature (adrenalin, apomorphine, atropine, quinine, cocaine, codeine, ergotine, eserine, morphine, narceine, novocain, pilocarpine, sparteine, strychnine, etc.), a boiling water-bath is to be used, keeping the water at the same level as that of the solution, or sterilization for half an hour in an autoclave at ordinary pressure. Solutions of substances which decompose at 100° (glycerophosphate of calcium, heroin, strophanthin, etc.) are to be sterilized by "tyndalization," *i. e.*, by main-

taining the solution for one hour in the water-bath, or incubator, at a temperature of 50° to 60°, and repeating this operation five or six times at intervals of twenty-four to forty-eight hours. Filtration through a Chamberland filter is to be resorted to in the case of substances liable to decompose at lower temperatures, such as serums, ferments, organotherapeutic preparations, duboisine, scopolamine, hyoscyamine, etc.

As a precaution, in order to be sure that perfect sterilization has been effected the use of Gosio's test solution is prescribed; this is carried out by the addition to the solution, prior to filling in ampuls, of a sterilized solution of potassium tellurite 1 : 100,000, and keeping the sealed ampuls in a thermostat at 30°–35°, whereupon the non-sterilized ampuls will exhibit a black precipitate. Precise indications are also given for sterilizing oily solutions intended for subcutaneous exhibition. The solvent has to be previously sterilized, and oils are to be deprived of their acid content by treatment for three days with alcohol (95 percent), in the proportion of 30 grams of alcohol to 100 grams of oil. At the end of three days the alcohol is decanted and the same operation repeated twice, whereupon the oil is sterilized for half an hour at a temperature of 160°. Liquid paraffin should have a neutral reaction, and be sterilized in an autoclave for twenty to thirty minutes at 115°.

TESTING GLASS FOR ALKALI.

The following test is included for ampuls and flasks. Ten or twelve ampuls or five or six flasks are filled with a 1 to 2 percent solution of morphine hydrochloride, or 5 percent solution of strychnine nitrate, or 1 percent solution of mercuric chloride, closed and maintained in an autoclave at 112° for thirty minutes. If the glass is neutral, no change will have taken place; if, however, it is alkaline, the solution of morphine becomes brown and shows a precipitate of free alkaloid; the solution of strychnine yields a crystalline precipitate, and that of mercuric chloride a reddish brown precipitate.

THE MONOGRAPHS.

The text of the articles included in the Pharmacopoeia, as well as the official titles, is in Italian, the Latin designation appearing as a synonym. The descriptions and tests are given in concise language, the impurities being indicated in brackets. Appended to each article is a list of the preparations into the composition of which the substance in question enters. In the case of chemicals the empiric formula as well as the molecular weight is stated. In the case of essential oils the statement "dextrogyrate," or "laevogyrate," alone appears and no degrees of optical rotation or refractive indices are given; this is influenced by the fact that "these properties vary for different qualities of the same genuine oil, and, further, their determination demands the acquisition of costly apparatus, which cannot be demanded of the pharmacist." No definite tests for arsenic or lead limits have been included.

Turning to a consideration of the single articles, the following points may be mentioned:

Boric Acid.—A limit of 0.5 percent of sulphuric acid is admitted, to be determined by the following test: 1 gram of boric acid is dissolved in 30 grams of water, and, after acidulation with hydrochloric acid, 0.1 cc of normal solution of barium chloride is added, the solution brought to boiling, and filtered. On the addition of a further amount of barium chloride solution no cloudiness should appear.

Tartaric Acid.—Melting-point about 170°. Ash not more than 0.5 percent.

Aconitine.—Formula: $C_{34}H_{47}NO_{11}$. Should not have a bitter taste (amorphous alkaloids of aconite).

Balsam of Peru.—Specific gravity 1.135 to 1.150. On shaking in a test-tube for one minute, 5 drops of balsam of Peru with 3 cc of solution of ammonia, only a slight foam should be formed, which disappears within a short time, and the mixture should not become gelatinous even after twelve to twenty-four hours (colophony and other coniferous resins). Saponification value 224.6.

Balsam of Tolu.—Acid value 112 to 168; saponification value 154 to 191.

Copaiba.—Specific gravity 0.96 to 0.99. Distilled in a current of steam, it is required to yield 40 to 60 percent of essential oil and 60 to 40 percent of resin. Acid value 75.8 to 84.2; saponification value 84.2 to 92.7.

Sodium Benzoate.—The salt, with one molecule of water, should contain not more than 11.2 percent of water.

Benzoin.—Not more than 8 percent should be insoluble in alcohol (90 percent); ash limit 2 percent.

Sodium Bicarbonate.—The limit of neutral carbonate is fixed at 2 percent and 1 gram, after drying over sulphuric acid, is required to yield not more than 0.638 gram of residue on incineration.

Acid Quinine Hydrochloride.—The following test for the presence of barium chloride has been included: An aqueous solution of 0.1 gram should remain clear on the addition of 1 drop of dilute sulphuric acid. It is required to contain 81.6 percent of quinine.

Quinine Bisulphate is required to contain 59.15 percent of quinine. On drying at 100° it should not lose more than 23 percent in weight.

Borax.—Sulphuric acid limit 0.5 percent (same test as for boric acid).

Sodium Bromide.—Should not contain any water of crystallization. Sodium chloride limit 2 percent.

Oil of Theobroma.—Iodine value 34 to 38. The solution in ether should not yield an acid reaction.

Caffeine.—Melting-point 236° to 237°.

Camphor.—Melting-point 179°. Soluble 1 : 2,000 of water. Powdered camphor shaken with water should yield a liquid which is not rendered cloudy by the addition of solution of silver nitrate (ammonium chloride).

Cantharidin.—Melting-point 218°. Soluble 1 : 3,300 alcohol, 1 : 80 chloroform.

Codeine.—Melting-point about 153°.

Dry Extract of Belladonna.—Alkaloidal content 0.5 percent.

Liquid Extract of Male Fern is required to contain 20 to 28 percent of crude filicin, tested by the method indicated in the B. P.

Extract of Hyoscyamus.—Alkaloidal content 0.5 percent.

Silver Fluoride.—The description of this substance is followed by the note that "its use may be substituted in every instance by that of silver fluorosilicate, which is obtainable in 10 percent solution."

Gelatin.—Should contain not more than 17 percent of water. When immersed in water it should absorb at least 12 to 13 percent of the latter; the more it absorbs, the better the quality.

Menthol.—Melting-point 44°; boiling-point 212°. A small crystal of menthol dissolved in a mixture of 1 cc of acetic acid, 3 drops of sulphuric acid, and 1 drop of nitric acid should not impart a yellow color, turning to emerald-green, to the liquid (thymol).

Amyl Nitrite.—On mixing 1 cc. of amyl nitrite with 1.5 cc of alcohol and 1.5 cc of solution of silver nitrate, and adding a few drops of solution of ammonia, the mixture should not blacken (valerianic aldehyde).

Castor Oil.—Saponification value 180 to 182, iodine value 80 to 85.

Pancreatin.—1 part of pancreatin in alkaline or neutral solution is required to digest 100 parts of moist fibrin within five hours, at a temperature of 45°. 0.1 gram of pancreatin should liquefy within a short time, at 45°, 500 grams of mucilage of starch, prepared with 30 grams of starch, and the resulting liquid, after filtration, should render colorless four times its volume of Fehling's reagent.

Liquid Paraffin.—Specific gravity 0.875 to 0.890; it should not contain hydrocarbons boiling below 300°.

Hard Paraffin.—Melting-point 68° to 72°.

Senega Root.—Shaken with water it should produce a foam (senegin content about 3 percent). Five grams of powdered root is macerated with 30 grams of ether and filtered; 20 cc of tepid water is added to the filtrate; on evaporating the ether the aqueous solution should assume a violet coloration on the addition of solution of ferric chloride. Ash limit 3 percent.

Theobromine and Sodium Salicylate is required to contain about 45 percent of theobromine. A solution of 2 grams in 10 grams of water, to which solution of sodium hydroxide is added, is shaken up with chloroform, the latter removed and evaporated. The residue should not exceed 0.01 gram (limit of caffeine).

Quinine Sulphate.—One gram should dissolve completely at a temperature of 40° to 50° in 7 cc of a mixture of two volumes of chloroform and one volume of absolute alcohol, and, on cooling, the liquor should remain clear (magnesium sulphate, sodium sulphate, salicin sugar, boric acid, starch, etc.). Five grams of quinine sulphate dried at 100° is shaken up with 200 cc of boiling water, and allowed to cool under agitation; the crystals which separate are removed by filtration under reduced pressure. The liquid is concentrated to about 10 cc and cooled, whereupon the crystals which separate are again removed by filtration under reduced pressure. The remaining liquid is evaporated to dryness in a weighed crucible, and the residue incinerated. The weight of the mineral residue thus obtained should not exceed 0.08 gram (0.16 percent) (soluble salts which might influence the application of the ammonia test).

Kerner's test (ammonia test) has been adopted with a few slight modifications. 0.3 gram of quinine sulphate is allowed to effloresce at 40° to 50° and shaken with 30 cc of water, maintaining the mixture in a water-bath warmed to 70° to 80°. After half an hour the contents are removed from the water-bath and allowed to cool during two hours to the temperature of its surroundings, whereupon it is placed in a large container with water of 15°, and left therein for another two hours, shaking frequently. It is first of all filtered through a clean, dry piece of cloth of 10 square centimeters, and the filtrate is again filtered through good filter-paper of a diameter of 7 cm., in such a way that three separate portions, each of 5 cc, are

each filtered into a graduated cylinder provided with a glass stopper. To the third portion, which must have a temperature of 15°, 7 cc of solution of ammonia (sp. gr. 0.96) is carefully added so as to prevent a rapid mixture of the two liquids; the solution of ammonia must also have a temperature of 15°. On gently mixing the liquids in the water-bath at 15° a clear solution should result (absence of cinchonidine, cinchonine, quinidine).

Zinc Sulphate.—Two grams of powdered zinc sulphate is shaken for ten minutes with 10 cc of absolute alcohol, and filtered. The filtrate, diluted with 10 cc of water, should not redden blue litmus paper (sulphuric acid).

Strophanthus Seeds.—Both the Hispidus and Kombé varieties are included under this title, only one description being given for both.

Tartarated Antimony.—The tests are as follows: 0.5 gram dissolved in 10 cc of water should not yield a precipitate on the addition of a mixture consisting of water 8 grams, neutral lead acetate 2 grams, and acetic acid (57 percent) 4 grams (absence of acid potassium tartrate). It is also tested for the presence of antimony and potassium oxalate: 1 gram dissolved in 20 cc of water and acidulated by the addition of tartaric acid should yield no precipitate on the addition of solution of calcium chloride.

Thymol.—Melting-point 49° to 50°; boiling-point 228° to 230°.

Tincture of Aconite.—Alkaloidal content, 0.05 percent.

Tincture of Digitalis is required to yield on evaporation at least 2.5 percent residue.

Tincture of Strophanthus.—Prepared from the seeds without previous removal of fat.

Valerian Rhizome.—To be collected from plants two to three years old, in the spring.

SOME NEW FORMULAS.

The following formulas for some galenical preparations may be mentioned:

PODOPHYLLIN AND CASCARA SAGRADA PILLS.

Podophyllin	0.20 gram
Dry extract of cascara sagrada	4 grams

Make into 20 pills.

COMPOUND SYRUP OF HYPOPHOSPHITES.

Calcium hypophosphite	34 grams
Sodium hypophosphite	20 "
Ferrous sulphate	7.5 "
Quinine bisulphate	1 gram
Citric acid	1 "

Dissolve the ferrous sulphate, quinine bisulphate, and citric acid in 100 grams of water at 40° to 60°; at the same temperature dissolve the hypophosphites in 200 grams of water. The warm solutions are mixed and allowed to cool; the precipitate is separated and washed with 100 grams of water, and in the collected liquids dissolve 600 grams of sugar, adding sufficient water to produce 1,000 grams of product.

To prepare compound syrup of hypophosphites with strychnine, add 0.1 gram of strychnine nitrate to 1,000 grams of the above syrup.

SYRUP OF CALCIUM AND SODIUM GLYCEROPHOSPHATES.

Calcium glycerophosphate	15 grams
Sodium glycerophosphate cryst	15 "
Citric acid	10 "
Water	60 "
Syrup, or orange syrup	900 "

COMPOUND SYRUP OF POTASSIUM GUAIACOLSULPHONATE.

Potassium guaiacol sulphonate	3 grams
Orange-flower water	10 "
Syrup of calcium lactophosphate	89 "

NAPHTHOLATED CHARCOAL.

Wood charcoal	40 grams
Beta-naphthol	30 "
Magnesium oxide	30 "
Alcohol (95 percent)	50 "

Mix the powders, add the alcohol, and reduce to a coarse powder by means of gentle heat.

HYDROUS LANOLIN.		PHENOLPHTHALEIN PILLS.	
Lanolin	30 grams	Phenolphthalein	1 gram
Water	10 "	Milk sugar	2 grams
Liquid paraffin	6 "	Syrup and gum acacia	q. s. to make 10 pills

THE PHARMACOPOEIA AS A GUIDE.

In Continental countries the official Pharmacopoeia is regarded essentially as the authoritative compendium for the guidance of the pharmacist in the exercise of his daily duties, and in many countries, in addition to embodying the legal standards to be complied with as regards drugs and preparations, reagents and apparatus, the various laws and regulations affecting the exercise of the profession are also included. This course has been followed as heretofore, in compiling the new edition of the Italian Pharmacopoeia, and in the appendices we find a wealth of information of interest, in addition to the customary tables.

In the appendices are included: A list of reagents and volumetric solutions; notes on the determination of the acid, saponification and iodine values; alcohol tables; a table giving the comparisons between specific gravities and the degrees found by Baumé's aerometer, and also by Cartier's and Gay-Lussac's alcoholometers; a table of drops to one gram, and the weight of each normal drop, for a number of liquids; maximum single and daily doses for certain heroic drugs. Further we find lists enumerating the utensils and apparatus with which every pharmacy must be provided, the substances to be kept in a locked cupboard, those to be kept protected from light; a list of certain drugs and chemicals which may be sold outside a pharmacy, but only in quantities exceeding the minimum amount stated against each; thus the sale of 1,000 grams of boric acid, or of 100 grams of krameria root, is permitted to any dealer, but for smaller amounts the pharmacist is the sole legal vendor. This list is followed by one indicating those official substances which may be supplied by a pharmacist without a prescription, and by lists of the official remedies which must be stocked by every pharmacy, and also a list of utensils and of remedies to be included in the medical cupboards, *i. e.*, stocks of medicines kept by certain institutions, etc. These tables are followed by eighty-three pages devoted to pharmaceutical legislation. In the first place the whole of the Italian pharmacy law of 1913 is reproduced, and the regulations issued in connection with this measure. Then follow excerpts from the various health laws of 1907, 1910, 1916, several regulations dealing with the sale of alcohol, saccharin, etc., in so far as these affect the pharmacist in the exercise of his profession. The terms of the Brussels Convention of 1902 are also included.

The new edition, however, discloses an important omission—it does not contain the list, with formulas, of those pharmaceutical specialties which have been approved by the Board of Health. The Ministerial circular of 1898, calling upon manufacturers of specialties to submit, for inclusion in the Pharmacopoeia, the following details—formula, length of time that the specialty has been on the market, places where it is principally sold, total annual output, and the methods adopted by the manufacturer to determine its active principles—have been duly inserted, but the familiar list of Italian as well as a few foreign specialties, with their composition, which in the previous edition filled thirty-two pages, is absent.

The work closes with an index of all the titles and synonyms appearing in the volume with the addition of trade-mark names, and an index of the contents.