CURRENT REVIEW OF PHARMACEUTICAL JOURNALS FOR MARCH, 1915.*

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In this review, with only one or two exceptions, original articles have been abstracted.

A number of papers not referred to, dealing with scientific subjects, are printed this month, but the majority of such papers are reprinted from the Journal of the A. Ph. A. or taken from other Association proceedings.

Much attention is given this month in the American journals to discussion and explanation of the Harrison Act. The Stevens Bill, which is expected to control the "cut rate" evil also occupies attention editorially and in discussion.

In most journals a large share of space is devoted to commercial questions. Papers on salesmanship, accounting, collecting bills, system, buying, etc., etc., are predominant, and the soda fountain and its needs are also given an important place.

The journals in this respect reflect the condition of the drug business at large and this is not altogether a cause for discouragement since business methods must be improved in many stores if they would continue to exist, and we are all seeing at least a few stores where the best professional ideals are maintained and made a financial success through the application of sane and efficient business principles.

The following abstracts were selected as of sufficient interest to report:

AMERICAN DRUGGIST AND PHARMACEUTICAL RECORD.

Toilet Preparations (Page 98).—F. T. Gordon starts a series of articles on this subject, the paper in this issue being devoted chiefly to a general consideration with advice to the would-be manufacturer.

PRACTICAL DRUGGIST.

The Cultivation of Medicinal Plants.—By Fred B. Kilmer (P. 20). This is the first of a series of articles on this subject, which is of rapidly increasing importance. Dr. Kilmer reviews the work of the U. S. Department of Agriculture in this field, through the Bureau of Plant Industry, and also tells of the much more extensive development of drug cultivation in Europe. A few American manufacturers have been studying these problems and growing some drugs on a commercial scale, and he predicts that if manufacturers of medicinal products are really interested in getting better drugs, they can do so through systematic, scientific investigation and experimental cultivation, but this in some instances may require years of work.

THE AMERICAN PERFUMER.

This journal is running several interesting articles in serial form. The titles are *How Flower Concretes are Made, The Soap-Making Industry,* by Dr. E. G. Thomssen, and *Vanilla Beans,* by Wallace Mawhey. While these may not be of especial value to retail druggists they are a valuable addition to the literature on these subjects.

THE WESTERN DRUGGIST.

Several excellent articles on the business side of pharmacy are found in this issue. *Letters that will collect your accounts* (Page 75) is the title of one. In this article five form letters

* Read before Philadelphia Branch, April 13.

are given and suggestions for using them. *The making of a 100 Point Salesman* (Page 77) is also an article which will be of interest to many.

MERCK'S REPORT.

Perfumery and the Chemist, by Edward T. Beiser (Page 81). A short review, in popular style, of the development of synthetic chemistry in the field of perfumery. Many of the more common artificial perfumery materials are mentioned and their chemistry and method of production briefly outlined.

BULLETIN OF PHARMACY.

(Page 110.)—A symposium on *The best way to secure a mailing list* occupied an important place in this month's issue. The giving of a small prize, such as a calendar, pencil, etc., on the return of a coupon or card which has been mailed or distributed in the district seems to be the favorite method of obtaining a valuable mailing list.

DRUGGISTS' CIRCULAR.

(Page 153.)—The subject of *Toilet Cream manufacture* is discussed by H. C. Bradford and working formulas published for "Theatrical" "Make-Up," "Oxygenated," and "Cocoa Butter" Cold Creams, also for "Satin Cream" and Cucumber Cream and Jelly.

The formula for "Satin Cream" is unusual and may be of value to the members. It is:

Pure, sweet unsalted lard	220 gm.
Potassium hydroxide	31 gm.
Alcohol, 60 percent	10 gm.
Water	90 gm.

Dissolve the KOH in the water, pour off the clear liquid and mix it with the lard in a warm pan. Finally work in the alcohol in portions. The fat is largely saponified and the product is used chiefly for the removal of soot, dust, travel stains, etc., by being applied freely and then wiped off with a cloth.

(Page 201.)—Here will be found an interesting article on the *Drug Store Library,* by Frank Farrington. Emphasis is especially laid upon the necessity of having a good business library, books on advertising, window trimming, salesmanship, management, origin and manufacture of goods, etc. He advises proprietors to subscribe to a good trade paper for their clerks, having it sent to their homes.

(Page 203.)—Mr. M. P. Gould discusses the possibilities of advertising for a retail druggist, he pointing out the conditions under which each form of advertising may best be used.

THE PHARMACEUTICAL ERA.

(Page 97.)—Editorially the Era reviews the purposes, scope, and provisions of the Harrison Anti-narcotic Law, stating that in its application to the drug trade it is the "most important legislation ever enacted in this country."

(Pages 101 to 113.)—The "Act" and all regulations to date, issued by the Department are copied in full. An extended list is also given of official and proprietary preparations containing Opium or Coca or their derivatives which are affected by the Law.

AMERICAN JOURNAL OF PHARMACY.

The Proper Time to Collect Sanguinaria (Page 97).—O. A. Farwell of Parke, Davis & Co. made a number of examinations of Sanguinaria collected at different seasons of the year and confirmed the conclusions of Drs. Homerberg and Beringer, published several years ago, in which they stated that the rhizome was richest in alkaloid "immediately after flowering" and not "after the death of the foliage," the time for collection specified in the Pharmacopœia.

THE PACIFIC PHARMACIST.

An abstract from the Consular Report calls attention to the many recent new uses for Infusorial Earth. These consist in its use as an absorbent for nitro-glycerin in the making of dynamite, also as a non-conductor of heat in pipe coverings and fire-proof buildings, as an absorbent for liquid manures for the production of artificial fertilizers and, when boiled with shellac, as a suitable material for talking machine records.

N. A. R. D. JOURNAL.

The Cultivation of Medicinal Plants (Pages 1111, 1165 and 1218) is considered by taking up individual drugs and compiling the available information from Government Bulletins and from published articles and books by those who have been studying and experimenting on this subject.

The Weekly Legislative News-Letters, by J. Leyden White, are always interesting and of much assistance to pharmacists in keeping in touch with National legislative programmes and also in understanding the purpose and scope of proposed new laws.

PHARMACEUTICAL JOURNAL OF ENGLAND.

The Chemical Industries of Germany.—By Prof. Percy Frankland (Page 353). The tremendous importance of the chemical industries of Germany is pointed out, figures being given to show production in recent years. For instance, 11,000,000 tons of crude potash salts was marketed in 1912, valued at about $44,000,000.

The statement is also made that it is believed Germany is now independent in respect to nitrate supply, since she has perfected a process whereby Ammonia is produced from hydrogen and atmospheric nitrogen under a pressure of 200 atmospheres and at 500° C. in the presence of a catalyst. The Ammonia is then converted into Nitric Acid by burning it in air in the presence of a catalyst.

Other figures are given to show the importance of the production of explosives, artificial silk (valued at $15,000,000 in 1912), synthetic organic chemicals, including dye-stuffs, etc.

REPORT OF COMMITTEE ON UNOFFICIAL STANDARDS.

The following portion of the report of the Committee on Unofficial Standards relates to certain crude drugs and chemicals suggested for inclusion in the next revision of the National Formulary, and by order of the Council is published in the Journal in order to afford opportunity for discussion before the standards proposed are finally adopted.

Manufacturers, importers, analysts, and others interested in any of the proposed standards, are requested to send their criticisms and comments to the chairman of the committee, George M. Beringer, 501 Federal St., Camden, N. J.

(Continued from May Issue)

CHIRATA.

Chirata

1. The dried plant of *Swertia Chirayita* (Roxburgh) Hamilton (Fam. *Gentianeceae*).

2. Smooth, root simple, about 7 mm. thick near the crown, stem about 1 m. long, externally yellowish or purplish-brown; cylindrical near the base, quadrangular and slightly winged above, with numerous opposite, ascending branches; wood yellowish, thin, enclosing usually a large yellowish easily separable pith; leaves opposite, sessile, ovate-lanceolate, entire, five-nerved, about 6 cm. long; flowers numerous, panicled, small, with a four-lobed calyx and corolla, capsule ovoid, acute, one-celled, many-seeded; odor slight; taste intensely bitter

3. *Average dose.*—1 gm. (15 grains).

CONDURANGO.

Condurango.

1. The dried bark of *Marsdenia Condurango* Reichenbach filius (Fam. *Asclepiadaceae*).

2. In single quills or transversely curved pieces, usually from 4 to 13.5 cm. in length; bark 1 to 6 mm. in thickness; outer surface light grayish-brown to dark brown, nearly smooth and with numerous lenticels, or more or less scaly and considerably roughened, the scales soft, occasionally with brownish-black apothecia of a fungus; inner surface grayish-white or light brown, longitudinally striate; fracture short and granular or short-fibrous; odor slightly aromatic, especially marked in the fresh drug; taste bitter and aromatic.

3. Under the microscope sections of Con-

durango show a corky layer consisting of several rows of thin-walled cells, frequently with yellowish-brown contents; a layer of phelloderm of 8 to 10 rows of cells, containing either starch grains or membrane crystals of calcium oxalate, the latter in prisms, 0.010 to 0.035 mm. in length; a primary cortex of collenchyma containing chloroplasts, starch grains, or rosette aggregates of calcium oxalate, 0.015 to 0.040 mm. in diameter; a pericycle or pericambium of tangentially elongated parenchyma cells, with groups of bast-fibers and laticiferous vessels in an interrupted circle; middle bark with large groups of stone cells varying from nearly isodiametric to elongated, sometimes very irregular in form; inner bark with medullary rays 1 to 2 cells wide, numerous laticiferous cells accompanied by small groups of sieve cells, parenchyma containing either starch grains or rosette aggregates of calcium oxalate, and an occasional isolated bast-fiber or small group of stone cells.

4. *Powder*—Light, yellowish-brown; consisting chiefly of fragments of stone cells and parenchyma containing calcium oxalate crystals and starch grains; stone cells chiefly in large groups, the individual cells being more or less irregular in shape and with very thick porous walls, the lumina being usually filled with air; calcium oxalate chiefly in rosette aggregates, occasionally in single prisms, mostly from 0.015 to 0.020 mm. in diameter; starch grains mostly single, frequently 2- to 4-compound, the individual grains being from 0.003 to 0.015 mm. in diameter; bast-fibers non-lignified; very long and from 0.010 to 0.035 mm. in width; fragments of thin-walled latex tubes from 0.015 to 0.025 mm. in diameter and filled with a granular substance; fragments of cork grayish or light yellowish-brown.

5. Macerate 1 gm. of the powdered bark in 5 cc. of cold water; filter and heat the filtrate in a test-tube, it should become very cloudy, but on cooling assumes its original transparency.

6. The yield of ash should not exceed 12 percent.

CONIUM.

Conium.

1. The full grown, but unripe fruit of *Conium maculatum* Linné (Fam. *Umbelliferae*), carefully dried and preserved, and yielding, when assayed by the process given below, not less than 0.5 percent of coniine. After being kept for more than two years, Conium is unfit for use.

2. Broadly ovoid, greenish-gray, the two carpels of most of the fruits separated, each about 3 mm. long and about 1.5 mm. in diameter, ovoid, somewhat curved, the inner, flattened side marked by a deep longitudinal groove, the outer, convex side, with five pale yellow, somewhat crenate ribs, the intervening surfaces wrinkled but otherwise smooth; pericarp without oil-tubes; odor slight, but when triturated with a solution of potassium hydroxide, strong, disagreeable, and mouse-like; taste characteristic, disagreeable, afterwards somewhat acrid.

ASSAY OF CONIUM.

3. Conium, in No. 40 powder, fifteen grammes ..... 15 gm.
Solution of Sodium Hydroxide, fifteen cubic centimeters.... 15 cc.
Purified Petroleum Benzin.
Normal Hydrochloric Acid Volumetric Solution.
Sodium Carbonate Test Solution.
Tenth-Normal Sulphuric Acid Volumetric Solution.
Fiftieth-Normal Potassium Hydroxide Volumetric Solution.

Cochineal T. S. each, a sufficient quantity.

Place the Conium in a 250 cc. Erlenmeyer flask, add 150 cubic centimeters of purified petroleum benzin and then 15 cubic centimeters of solution of sodium hydroxide, insert the stopper securely, and shake the flask vigorously at frequent intervals during six hours. Allow the solution to separate and decant 100 cubic centimeters of the clear benzin solution (representing 10 gm. of the drug) into a separator; shake this out with successive portions of 20 cc., 10 cc., 5 cc. and 5 cc. of normal hydrochloric acid V. S. If a few drops of this last washing gives an alkaloidal reaction with iodine T. S., continue the shaking out with successive portions of 5 cc. each of normal hydrochloric acid V. S. until the alkaloid is all extracted. Collect the acid washing and concentrate by evaporation on a water-bath to 10 cubic centimeters, cool and transfer the liquid to a separator, then add sodium carbonate T. S. in excess. Extract the alkaloid by shaking out with successive portions of 15 cc. each of purified petroleum benzin. Separate the benzin washings and filter into a beaker. Then add exactly 10 cubic centimeters of tenth-normal sulphuric

acid V. S. and stir thoroughly for two minutes so as to mix the acid and benzin solution. Evaporate the benzin layer in a current of warm air, at a temperature not exceeding 60° C. and as soon as the benzin has disappeared, cool, add 5 drops of cochineal T. S. and titrate the acid solution with fiftieth normal potassium hydroxide. Calculate the amount of coniine neutralized by the acid by using the factor 0.0126 and multiply the result by ten to obtain the percentage of coniine in the drug.

4. *Average dose.*—0.200 gm (3 grains).

CONVALLARIA.

Convallaria.

Lily-of-the-Valley Roots.

1. The dried rhizome and roots of *Convallaria majalis* Linné (Fam. *Liliaceae*).

2. Rhizome horizontal, elongated, usually branched, cylindrical, variable in length, 1 to 3 mm. in diameter; externally yellowish-white or pale brown, with a few circular stem scars, and from the under and side portions at the nodes usually arise from 3 to 5 thin, tortuous, dark brown, branching roots; fracture short or fibrous; internally whitish; odor faint; taste sweetish, becoming bitter and acrid.

3. Under the microscope sections of the rhizome of Convallaria show an epidermal layer with a thick outer layer of cutin; a hypodermal layer of a single row of collenchyma; a cortex made up of about 20 rows of parenchyma cells, some of which contain starch and raphides of calcium oxalate; a prominent endodermis, the radial and inner walls of which are strongly thickened and lignified; inside the endodermis is an interrupted circle of collateral fibro-vascular bundles, the woody portion of which has in cross section the shape of the letter "V"; inside the circle of bundles is another interrupted circle of fibro-vascular bundles of the concentric type, the sieve tissue being surrounded by the xylem; the parenchyma cells of the pith separated by large intercellular spaces.

4. Under the microscope, transverse sections of the root of Convallaria show a hairy epidermal layer, a hypodermis of a single row of cells; a cortex of about 6 rows of cells, some of which contain starch, raphides and oil; the cells of the endodermal layer resemble those of the rhizome; fibro-vascular bundles mostly 5.

5. *Powder*—Dark brown; tending to cake on standing; consisting chiefly of cellular fragments and a few starch grains and raphides of calcium oxalate; cells of endodermis with slightly oblique ends and considerably thickened walls, lignified porous walls, fragments of tracheæ with spiral and scalariform thickenings, or with porous walls; starch grains single or compound, mostly nearly spherical, and from 0.003 to 0.012 mm. in diameter; raphides of calcium oxalate few, from 0.020 to 0.045 mm. in length.

CROCUS.

Saffron.

1. The stigmas of *Crocus sativus* Linné (Fam. *Iridaceae*), without admixture of more than 10 percent of the yellow styles and other harmless impurities. Saffron should be kept in tightly-closed containers and protected from the light.

2. Stigmas separate or three attached to the summit of the style; stigmas usually about 25 mm. in length, cornucopia-shaped, of a dark rich red color, the margin dentate or fimbriate; styles about 10 mm. in length, more or less cylindrical, solid, yellowish; odor strong, peculiarly aromatic; taste bitterish, aromatic. When chewed it colors the saliva orange-yellow.

3. Under the microscope the upper end of the stigma shows numerous cylindrical papillæ about 0.0150 mm. in length, among which should occur a few spherical pollen grains, the latter being nearly smooth, and from 0.040 to 0.075 mm. in diameter; occasionally some of the pollen grains have germinated and show pollen tubes.

4. When placed in sulphuric acid, the stigmas should be immediately colored blue, gradually changing to violet, and finally become a deep wine-red color.

5. Add 0.010 gm. of finely powdered Saffron to 100 cc. of cold water, allow it to macerate for several hours and filter; upon adding 10 cc of this filtrate to 100 cc. of water, it should give a distinct, yellow-colored solution.

6. Macerate 0.010 gm. of Saffron in 5 cc. of methyl alcohol; a deep orange color should be imparted to the liquid. Macerate 0.010 gm. of Saffron in 5 cc. of acetone, alcohol, or absolute alcohol; a distinct, lemon-yellow color should be produced. With corresponding quantities of Saffron and ether a very light lemon-yellow color should be produced. With corresponding quantities of Saffron and chloroform a very slight, yellow tinge should be imparted; and with corresponding por-

tions of Saffron and xylene, benzene, carbon disulphide and carbon tetrachloride, the solvents should remain colorless.

7. When pressed between filter paper, Saffron should not display transparent spots due to the absorption of oil.

8. Saffron should not lose more than 14 percent of its weight when dried at 100° C.

9. The yield of ash should not exceed 7.5 percent, and the ash should not be fusible.

CUPRI SULPHAS.

Cupric Sulphate. Copper Sulphate.

1. It should contain not less than 63.61, nor more than 66.79 percent of anhydrous copper sulphate, corresponding to not less than 99.5 percent of the hydrated salt, $CuSO_4+5H_2O=249.72$. It should be kept in well-stoppered bottles.

2. Copper Sulphate occurs as large, transparent, deep blue, triclinic crystals; odorless, of a nauseous metallic taste; slowly efflorescent in dry air.

3. It is freely soluble in cold and very soluble in hot water; it is slightly soluble in alcohol and freely soluble in glycerin.

4. When heated to 30° C. the salt loses part of its water of hydration and is converted into a pale blue, amorphous powder. More water is lost at 100° C. and finally at 200° C. a white, anhydrous powder remains. At a still higher temperature, sulphur dioxide and oxygen are given off, and a residue of black cupric oxide is left.

5. An aqueous solution (1 in 20) has a blue color, and shows an acid reaction with litmus.

6. On placing a drop of an aqueous solution of the salt (1 in 20) on a bright piece of iron, a red film of metallic copper will be deposited.

7. Barium chloride T. S. produces in an aqueous solution (1 in 10) a white precipitate, insoluble in hydrochloric acid.

8. On adding ammonia water to an aqueous solution of Copper Sulphate (1 in 10), drop by drop, a pale blue precipitate of cupric hydroxide will be formed, which redissolves in an excess of ammonia water, forming a deep azure-blue solution.

9. Weigh accurately about 1 gm. of unefflorescecd crystals of Copper Sulphate, dissolve it in 50 cc. of distilled water and add 4 cc. of acetic acid and 3 gm. of potassium iodide. The titration of the liberated iodine with tenth-normal sodium thiosulphate V. S., starch T. S. being used as indicator, should indicate not less than 63.61 percent of anhydrous Copper Sulphate. Each cubic centimeter of tenth-normal sodium thiosulphate V. S. used corresponds to 0.015964 gm. of anhydrous copper sulphate ($CuSO_4$).

10. Each gramme of Copper Sulphate, U. S. P., corresponds to at least 39.84 cc. of tenth-normal sodium thiosulphate V. S.

CYPRIPEDIUM.

Cypripedium. Lady Slipper Root.

1. The dried rhizome and roots of *Cypripedium hirsutum* Miller (*Cypripedium pubescens* Willdenow), or of *Cypripedium parviflorum* Salisbury (Fam. *Orchidaceae*).

2. Rhizome of horizontal growth, curved, 3 to 10 cm. long, 2 to 6 mm. thick, orange-brown to dark-brown, the upper side beset with numerous circular, cup-shaped scars, closely covered below with simple wiry roots, varying from 3 to 15 cm. in length; fracture of rhizome short, white, that of roots somewhat fibrous; odor distinct, heavy, valerian-like; taste sweetish, bitter, and somewhat pungent.

3. *Average dose.*—1 gm. (15 grains).

EUPATORIUM.

Eupatorium. Boneset.

1. The dried leaves and flowering tops of *Eupatorium perfoliatum* Linné (Fam. *Compositae*).

2. Usually more or less broken; leaves opposite, the pair united at the base, from 8 to 20 cm. long and 1.5 to 5 cm. broad, tapering regularly from near the base to an acute apex, crenate-serrate, rugosely veined, rough and bright green above, yellowish-gray-green, tomentose and resinous-dotted beneath; flower-heads small, numerous, corymbed, with a campanulate involucre of lance-linear imbricated scales and with from 10 to 15 tubular yellowish-white florets, having a bristly pappus in a single row; odor faintly aromatic; taste strongly bitter.

3. *Average dose.*—2 gm. (30 grains).

EUONYMUS.

Euonymus.

(Euonymus, U. S. P. VIII. Wahoo. Burning Bush Bark.)

1. The dried bark of the root of *Enonymus atropurpureus* Jacquin (Fam. *Celastraceae*) with not more than 3 percent of adhering wood.

2. Usually in transversely curved pieces, occasionally in single quills, 2 to 7 cm. in

length; bark, 1 to 2.5 mm. in thickness; very light in weight; outer surface grayish or light brown, somewhat wrinkled, occasionally transversely fissured from the lenticels and with scale patches of soft cork; inner surface grayish-white, longitudinally striate and somewhat porous; fracture short with silky, projecting, modified bast fibers; odor distinct; taste bitter and acrid.

3. *Powder*—Light brown; starch grains numerous, nearly spherical, 0.003 to 0.012 mm. in diameter; fragments of cork with nearly colorless thin walls; secretion cells with yellowish or brownish amorphous contents; bast fibers very long, with thin non-lignified walls possessing numerous small, more or less oblique pores; numerous fragments of parenchyma containing starch; calcium oxalate in rosette aggregates, 0.015 to 0.035 mm. in diameter, the amount in different specimens showing some variation.

EXTRACTUM CARNIS.

Extract of Beef.

1. The residue obtained from fresh beef broth by evaporation at low temperature.

2. A yellowish-brown to dark-brown, slightly acid, pasty mass having an agreeable meat-like odor and taste.

3. 25 gm. of Extract of Beef diluted to 250 cc. with distilled water yields a nearly clear solution, free from sediment. Portions of this solution should answer to the following tests:

4. 10 cc. of the solution boiled for one minute with 1.5 gm. of purified animal charcoal, the loss by evaporation restored and filtered, the filtrate produces no blue coloration when one drop is added to 3 drops of diphenylamine solution in concentrated sulphuric acid (1:100) (limit of nitrates).

5. 10 cc. of the solution when distributed over sand or asbestos and dried in a flat-bottomed porcelain dish to constant weight in an oven at a temperature of 105° C., yields a residue of not less than 0.75 gm., equivalent to 75 percent of solids in the original sample.

6. If the residue from 10 cc. of the solution be incinerated the ash must not exceed 30 percent of the residue, nor must the sodium chloride in the ash exceed 10 percent of the residue when calculated from the total chlorine as determined by the U. S. P. (Volhard) method.

7. To 100 cc. of the solution contained in a 500 cc. Kjeldahl flask, add 5 gm. of barium carbonate, 100 cc. of water and distil 100 cc., using a connecting bulb, into 10 cc. of half normal hydrochloric acid V. S. Titrate the excess of acid, using cochineal T. S. as indicator, and from the acid consumed by the distillate, calculate the percentage of nitrogen as ammonia. This must not exceed .35 percent of the total solids.

8. Transfer 25 cc. of the solution to a 100 cc. Erlenmeyer flask, add 50 cc. alcohol and shake the mixture thoroughly. When the precipitate has subsided, filter, collect the precipitate upon a 9 cm. counterpoised filter, wash the precipitate three times with a mixture of alcohol and water (2 to 1 by vol.), and then dry it to constant weight at 105° C. The weight of this precipitate must not exceed 10 percent of the total solids. (Reserve the filtrate and washing for the determination of nitrogen.)

9. To an aliquot portion of the alcoholic filtrate from the preceding test corresponding to 1 gm. of the alcohol soluble solids, add 4 cc. of sulphuric acid and evaporate to dryness in a 500 cc. Kjeldahl flask. Determine the nitrogen by the Gunning-Kjeldahl method. The amount of nitrogen thus found must not be less than 0.06 gm.

FÆX COMPRESSA.

Compressed Yeast.

1. White or yellowish-white, soft and easily broken masses, having a characteristic slightly sour odor and not more than a faintly acid reaction to litmus.

2. When examined under the microscope numerous oidium and mycoderma cells and starch grains are seen.

3. Compressed yeast should not be used unless fresh and free from mildew and musty or foul odors.

FERRI HYPOPHOSPHIS.

Ferric Hypophosphite.

1. It should contain not less than 98 percent of pure Ferric Hypophosphite ($Fe(PH_2O_2)_3$=250.90), and should be kept in well-stoppered bottles.

2. A white, or grayish-white powder, odorless and nearly tasteless; permanent in the air.

3. Soluble in 2300 parts of water at 25° C. (77° F.), and in 1200 parts of boiling water; more readily soluble in the presence of hypophosphorous acid, or in a warm, concentrated solution of an alkali citrate, forming with the latter a green solution.

4. When strongly heated in a dry test-tube,

the salt evolves spontaneously inflammable hydrogen phosphide gas, and, on complete ignition, leaves a residue of ferric pyrophosphate.

5. Ferric Hypophosphite is readily oxidized by nitric acid or other oxidizing agents.

6. If to 1 gm. of the salt 10 cc. of acetic acid be added, no effervescence should occur (absence of *carbonate*), and if the mixture be subsequently heated to boiling and filtered, the filtrate should respond to the following tests:

7. The addition of a few drops of silver nitrate T. S. to a portion of the filtrate should, upon warming, cause a brown to black coloration or precipitate. If another portion of the filtrate be added, drop by drop, to an excess of mercuric chloride, T. S., a white precipitate of mercurous chloride is formed upon gently heating.

8. Another portion of the cold filtrate should afford no turbidity with ammonium oxalate T. S. (absence of *calcium*).

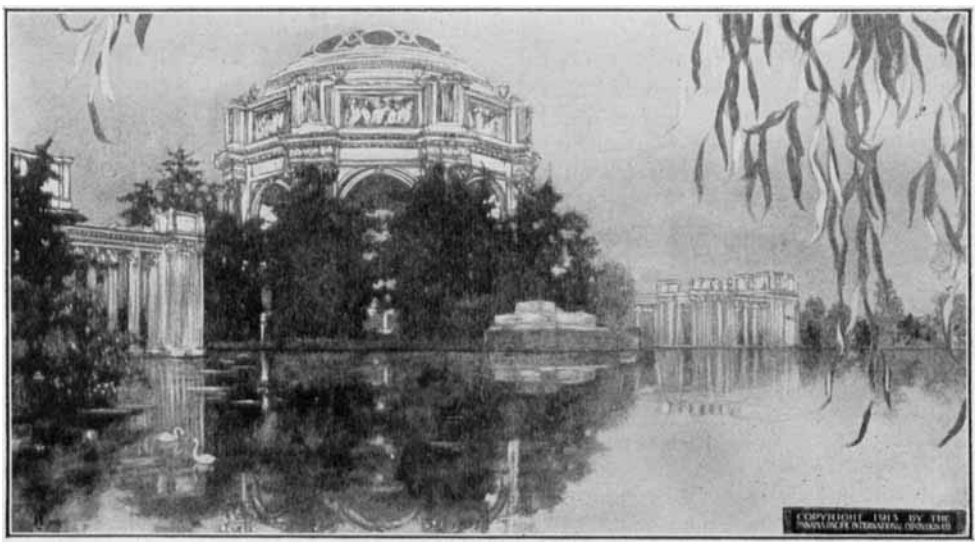
9. Dissolve 1 gm. of the salt in 20 cc. of diluted hydrochloric acid, with the aid of heat, and then add 1 cc. of barium chloride, T. S. Not more than a slight turbidity should be produced (sulphate).

10. If 0.5 gm. of the salt be boiled with 10 cc. of potassium hydroxide T. S., a reddish-brown precipitate will be produced; and if to the filtrate from the latter, slightly acidulated with hydrochloric acid, magnesia mixture T. S. be added, and subsequently an excess of ammonia water, no crystalline precipitate should be produced (absence of *phosphate*).

11. If 1 gm. of the salt be dissolved in about 25 cc. of boiling water by the aid of sufficient hydrochloric acid, added drop by drop, 0.2 cc. nitric acid added and the solution boiled and then a slight excess of ammonia water added, the filtrate from the precipitate should be colorless, and, after acidulating with hydrochloric acid, should not respond to the Time-Limit Test for *heavy metals*.

12. To 1 gm. of the salt add 10 cc. of nitrohydrochloric acid and evaporate to dryness. Dissolve the residue in 25 cc. of distilled water and 15 cc. of hydrochloric acid. Transfer it to a glass-stoppered container. Add 4 gms. potassium iodide and keep at 40° C for 30 minutes. Cool and titrate with N/10 sodium thiosulphate, V. S., using starch T. S. as indicator. It should show not less than 22% of Iron. Each cc. of N/10 sodium thiosulphate, V. S., used corresponds to 0.005584 gms. of Iron (Fe) and 0.025089 gm. Ferric Hypophosphite $Fe(PH_2O_2)_3$.

13. *Average dose.*—0.200 gm.=200 milligrammes (3 grains).



Looking across the Lagoon at the Palace of Fine Arts
Panama-Pacific International Exposition