

Reports of A. Ph. A. Committees

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, Geo. M. Beringer, 501 Federal St., Camden, N. J.

APPROVED MONOGRAPHS SUBMITTED AS STANDARDS FOR UNOFFICIAL DRUGS AND CHEMICAL PRODUCTS.

(Continued from p. 255.)

COPTIS.

Goldthread.

1. The dried plant *Coptis trifolia* (Linné), Salisb. (*Fam. Ranunculaceae*).

2. In loose matted masses consisting of long, much branched rhizomes and their small roots, together with the leaves. Rhizomes orange or golden yellow; leaves evergreen, long and slenderly petioled, trifoliate; the segments broadly obovate-cuneate, crenately lobed and toothed with sharp-pointed teeth, prominently veined, smooth, coriaceous, dark green and shining but often drying to a dull brownish hue; flowers, if present, small, solitary, terminating slender scapes, sepals 5-7, oblong, obtuse, deciduous; petals 5-6, pale yellow, small, clubshaped; stamens numerous; odor faint, taste purely bitter without astringency.

COUMARINUM.

Coumarin.

$C_6H_6O_2=146.048.$

1. The anhydride of ortho-oxy-cinnamic acid [$C_6H_4(CH)_2OCO$], occurring naturally in tonka, melilot and other plants, or prepared artificially.

2. Colorless, prismatic crystals, having a characteristic fragrant odor and a bitter, aromatic and burning taste.

3. Sparingly soluble in cold, more readily in

hot water; freely soluble in alcohol, ether and chloroform, also soluble in fixed and volatile oils.

4. When heated to between 67° and 68° C. it melts and at about 100° C. it commences to sublime; at 290° to 291° C. it boils without decomposition.

5. It dissolves in an aqueous solution of sodium or potassium hydroxide with a yellow color forming sodium or potassium coumarinate from which carbon dioxide precipitates coumarin. In hot concentrated sodium or potassium hydroxide solution it forms sodium or potassium coumarate from which hydrochloric acid precipitates the Coumarin in colorless needles.

6. A moderately strong aqueous solution of coumarin forms on addition of iodine T. S. a precipitate which is at first brown and flocculent and afterwards on shaking clots together to form a dark green curdy mass, leaving the liquid perfectly clear (distinction from vanillin).

7. Coumarin is not removed from ether solution by ammonia water (distinction from vanillin).

8. On warming 0.1 gm. of Coumarin with concentrated alcoholic solution of sodium hydroxide, adding chloroform and again warming, it should not give an odor of phenyl-isocyanide (absence of acetanilid).

DAMIANA.

Damiana.

1. The leaves of *Turnera diffusa*, Willd., or of *T. aphrodisiaca*, Ward. (*Fam. Turneraceae*), containing not more than 10 percent of the stems of the same plants.

2. Leaves obovate to lanceolate, 10 to 25 mm. long by 4 to 10 mm. wide, shortly petiole, obtuse or acute at apex, and with a short cuneate base, sharply 2 to 10 toothed on each side, the veins ascending, generally strong, straight and simple and running to the sinuses of the teeth, but sometimes branched and sending the branches into the teeth, the upper surface smooth and pale green, the lower glabrous or with a few hairs on the ribs (*T. aphrodisiaca*) to densely tomentose all over (*T. diffusa*).

3. Intermixed with the leaves there is generally to be found numerous usually reddish twigs, the young tips and buds of which are grayish with appressed pubescence (*T. aphrodisiaca*) or white with facculent wool (*T. diffusa*). Flower buds, yellowish flowers, and globose pods are generally present.

4. Odor aromatic; taste characteristic, aromatic and resinous.

DEXTRINUM.

Yellow Dextrin.

1. Starch Gum (British Gum, Alsace Gum).

A mixture of soluble carbohydrates, Amylodextrin, Achroodextrin, Erythro-dextrin and Maltodextrin, resulting from the incomplete hydrolysis of starch by the roasting process.

2. Transparent, yellowish lumps or granules or a light yellow, glistening, non-hygroscopic, amorphous powder with a peculiar and characteristic harsh feel, possessing a peculiar, somewhat disagreeable odor and a sweetish taste.

3. Soluble in about equal parts of water, forming a thick viscid solution, neutral to litmus paper; insoluble in alcohol, ether and chloroform, but soluble in glycerin.

4. A fresh solution, prepared cold, will be colored wine-red, but not blue on the addition of iodine T. S.

5. Alkaline cupric tartrate V. S. is not changed by a solution of dextrin when cold, but is reduced on boiling.

6. Not more than 5 percent should be soluble in boiling alcohol (limit of dextrose). Upon drying not more than 10 percent

should be lost (limit of moisture), and upon incineration the ash should not be more than 0.5 percent.

7. A solution of Dextrin in distilled water (1 : 20) should not be immediately precipitated by lead acetate T. S. or basic lead acetate T. S., but after the addition of a few drops of ammonia water precipitation occurs (absence of and difference from gums).

8. A solution of Dextrin should not be changed by hydrogen sulphide T. S., even after supersaturating with ammonia water (absence of metals).

DEXTRINUM ALBUM.

White Dextrin (Soluble Starch).

1. A mixture of soluble carbohydrates, Amylodextrin, Achroodextrin, Erythro-dextrin and Maltodextrin together with a variable amount of unconverted starch, resulting from the incomplete hydrolysis of starch by the action of acid.

2. A white, glistening, non-hygroscopic, amorphous powder with a peculiar and characteristic harsh feel, odorless and having a sweetish taste.

3. Only partly soluble in water, but completely soluble upon heating. The solution prepared cold is colored wine-red by iodine T. S. and a solution prepared warm is colored blue.

4. Besides the other characteristics and tests given under Dextrinum, white dextrin should also conform to the following test for the absence of oxalic acid:

A freshly-prepared cold aqueous solution should not become turbid by the addition of calcium chloride T. S. or calcium hydroxide T. S.

DULCAMARA.

Bittersweet.

1. The dried young stems and branches of *Solanum Dulcamara*, Linné (*Fam. Solanaceae*).

2. In short sections about 5 mm. or less thick, cylindriaceous, somewhat angular, longitudinally striate, more or less warty, and usually hollow in the center, the thin bark externally pale greenish, or light greenish-brown and glabrous, marked with alternate leaf scars, internally green, the greenish or yellowish wood forming one or two concentric rings; odor slight; taste bitter, afterwards sweet.

3. The ash should not exceed 6 percent.

DRIED EGG ALBUMIN.

(Dried Egg White.)

1. The white of the egg of *Gallus bankiva* var. *domestica* (*Order Gallinae*), and of other fowl, deprived of its moisture by desiccation at low temperature. It should be free from preservative and should be kept in closed containers in cool dry place.

2. Colorless, grayish or yellowish, transparent or translucent hard and brittle scales or fragments, almost odorless and having only a faint saline taste, and when ignited emitting a characteristic odor resembling burning feathers.

3. Slowly, but not completely, soluble in water, forming a neutral or slightly acid viscid solution which readily putrefies and upon heating to about 75° C. becomes turbid from the coagulation of the albumin. The solubility in water is much accelerated by the presence of alkaline carbonates and phosphates.

Insoluble in alcohol, chloroform or ether and in dried form may be heated to 100° C. without becoming insoluble in water.

4. The aqueous solution is laevogyrate, the angle of rotation being about -38° .

5. Upon incineration, the ash should not be more than 5 percent.

6. The aqueous solution (1 in 10) of Egg Albumin is coagulated by the addition of an equal volume of liquefied phenol. Sodium chloride does not precipitate the aqueous solution (1 in 10) except in the presence of acetic acid. Solutions of soluble salts of iron, copper, mercury, silver and lead produce precipitates when added to the aqueous solution (1 in 10), as does also a solution of tannic acid.

7. The aqueous solution (1 in 10) should respond to the following tests: it is readily precipitated by hydrochloric acid, the precipitate is insoluble in excess of acid; it is coagulated and quickly precipitated by alcohol in excess; on shaking with an equal volume of ether it is coagulated. (Difference from Blood Albumin.)

FERRI GLYCEROPHOSPHAS.

Ferric Glycerophosphate. (Ferric Glycerinophosphate.)

1. Containing a somewhat variable quantity of ferric glycerophosphate $[Fe_2(C_3H_5O_2P)_3]$ corresponding to 14 to 16 percent of metallic iron. It should be kept in well-stoppered bottles, protected from light.

2. Yellowish-green, transparent, amorphous scales or a greenish-yellow powder, odorless and tasteless. Slowly soluble in about 2 parts of water at 25°; insoluble in alcohol. An aqueous solution is acid to litmus paper and becomes turbid when heated.

3. An aqueous solution of the salt (1 in 20) is colored dark blue by potassium ferrocyanide; on further addition of hydrochloric acid a dark blue precipitate is produced.

4. On heating a powdered mixture of about 0.1 gm. of the salt with about 0.5 gm. of potassium bisulphate, pungent vapors of acrolein will be evolved.

5. On incineration, from 47 to 49 percent of a red brown residue should remain, which should not be alkaline to moistened litmus paper.

6. Not more than a slight yellow turbidity should be produced at once on mixing 5 cc. of an aqueous solution of the salt (1 in 50) with 10 cc. of ammonium molybdate T. S., on standing or on warming a yellow precipitate will be formed. (Limit of phosphate.)

7. An aqueous solution (1 in 50) acidulated with hydrochloric acid, should not become more than slightly turbid on the addition of barium chloride T. S. (limit of sulphate).

Another portion of this aqueous solution, acidulated with nitric acid, should not become more than slightly turbid on addition of silver nitrate T. S. (limit of chloride).

8. Dissolve about 0.5 gm. of the salt, accurately weighed, in 50 cc. of water, in a 100 cc. glass-stoppered flask. Add 5 cc. of hydrochloric acid and about 3 gm. of potassium iodide. After solution is complete, let the mixture stand 1 hour at room temperature in the stoppered flask, then titrate the liberated iodine with tenth-normal sodium thiosulphate V. S., using starch solution as indicator, each cc. corresponds to 0.005585 gm. of iron.

FOLIA FARFARAE.

Coltsfoot Leaves. (*Folia Tussilaginis*).

1. The dried leaves of *Tussilago Farfara*, Linné (*Fam. Compositae*), with not more than 5 percent of the rhizome and roots.

2. Petioles long, pubescent; blades very brittle, nearly orbicular or broadly ovate-reniform, 8-15 cm. long and nearly as broad, deeply cordate at the base, angulately lobed and dentate with red-brown teeth, palmately 5 to 9 veined; young leaves white floccose all over, but the upper surface soon dark green

and nearly smooth, the remaining densely white floccose.

3. Taste mucilaginous, faintly herbaceous, bitter; odor indistinct.

4. Ash should not exceed 20 percent.

GUTTA PERCHA.

Gutta Percha.

1. Gutta Percha is a coagulated, milky exudate of various trees, principally of the genus *Palaquium* (Fam. Sapotaceae).

2. A reddish, marbled mass, often containing sand, pieces of wood, bark, etc., absolutely insoluble in water. When purified it occurs as a white, hard, tough mass, usually molded into the form of sticks.

3. It should be soluble in chloroform, carbon disulphide, petroleum ether and turpentine, leaving not more than 10 percent residue.

4. It is slightly elastic at ordinary temperature, becomes pliable at 25 to 30° C., and gradually softens on heating, becoming quite plastic at 69° C.

5. If one gram of gutta percha be boiled for one hour with 20 cc. of absolute alcohol, not more than 0.5 gm. should go into solution.

6. If one gram of gutta percha be carefully ignited in a porcelain crucible, the residue should weigh not more than 0.05 grams.

7. When exposed to air and sunlight, gutta percha absorbs oxygen and becomes brittle. It should therefore be preserved under water.

HYDRASTINAE HYDROCHLORIDUM.

Hydrastine Hydrochloride.

1. The hydrochloride of the alkaloid Hydrastine [$C_{27}H_{23}O_6 \cdot NHCl = 419.65$]. The salt is very hygroscopic and should be kept in well-stoppered amber-colored bottles.

2. White to creamy white, crystalline powder, odorless, taste very bitter; easily soluble in water and alcohol, scarcely soluble in ether or chloroform. The solution of the salt is colorless and shows a neutral to faintly acid reaction to litmus paper.

3. It melts between 116°-117° C.

When ignited it leaves no residue.

4. When dissolved in 60 percent sulphuric acid and heated the liquid assumes a dark violet color.

5. Sulphuric acid containing a trace of potassium dichromate dissolves the salt with a red color, which changes to brown.

6. Nitric acid dissolves the salt, producing a yellow color.

An aqueous solution of hydrastine hydrochloride yields a yellow precipitate on the addition of potassium dichromate T. S. or potassium ferrocyanide T. S.; the precipitates are soluble in excess of the reagent.

8. In aqueous solution, mercury bichloride T. S. produces a white precipitate, soluble when heated.

9. A solution of about 0.1 gm. of the salt in 10 cc. of diluted sulphuric acid develops a blue fluorescence when a solution of potassium permanganate is added, but no fluorescence should be visible before addition of the permanganate (hydrastinine).

An aqueous solution (1 in 20) should not be reddened by the addition of chlorine water (berberine).

IRIS.

Blue Flag.

1. The dried rhizome and roots of *Iris versicolor*, Linné (Fam. Iridaceae).

2. Rhizome of horizontal growth, frequently branched, 5 to 10 cm. long, 1 to 2 cm. thick, the older portion cylindrical, the younger somewhat vertically flattened and terminating in a circular scar; annulate caused by the leaf-sheaths, grayish-brown to dark-brown; internally purplish; roots long and simple, more numerous at the broader end; odor slight; taste acrid and nauseous.

MAGNESII CHLORIDUM.

Magnesium Chloride.

1. It should contain not less than 95 percent of pure magnesium chloride [$Mg \cdot Cl_2 + 6H_2O = 203.33$]. It should be kept in airtight containers.

2. Colorless, transparent crystals, or white translucent pieces; deliquescent in moist air.

3. Soluble in about 0.6 part of water and also readily soluble in alcohol.

4. An aqueous solution of the salt, acidulated with nitric acid, yields a white precipitate on the addition of silver nitrate T. S.

5. A mixture of 10 cc. of the aqueous solution (1-20) with 10 cc. of ammonium chloride T. S. rendered slightly alkaline with ammonia water, yields a white precipitate on the addition of sodium phosphate T. S.

6. One gm. should dissolve in 10 cc. of alcohol 85% (by vol.), yielding a clear or nearly clear solution and the insoluble residue should not exceed 1 percent (*limit of substances insoluble in alcohol.*)

7. On adding 1 cc. of potassium sulphate T. S. to 10 cc. of the aqueous solution (1-20)

slightly acidulated with hydrochloric acid, no turbidity should result (absence of barium).

8. An aqueous solution (1 in 200), acidulated with hydrochloric acid, should not be reddened by potassium sulphocyanate T. S. (absence of iron).

9. An aqueous solution of the salt (1-20) should not respond to the U. S. P. VIII Time Limit Test for *heavy metals*.

10. Five cc. of the aqueous solution (1-10) should not respond to the U. S. P. VIII Modified Gutzeit's Test for *Arsenic*.

11. A mixture of 10 cc. of aqueous solution of the salt (1-20), 10 cc. of ammonium chloride T. S. and 5 cc. of ammonia water should not be rendered turbid upon the addition of ammonium oxalate T. S. (absence of calcium).

12. Dissolve about 0.3 gm. of the salt, accurately weighed, in 50 cc. of distilled water, acidulated with a little nitric acid, add an excess of decinormal silver nitrate V. S. and titrate the excess of silver nitrate with decinormal potassium sulphocyanate V. S., using ferric ammonium sulphate as indicator. Each cc. of decinormal silver nitrate V. S. corresponds to 0.01017 gm. of magnesium chloride ($MgCl_2 + 6H_2O$).

MANGANI GLYCEROPHOSPHAS.

Manganous Glycerophosphate.

1. A mixture consisting of 70 to 75 percent of Manganous Glycerophosphate [$MnC_3H_7O_6P=224.98$] and 25 to 30 percent of citric acid.

2. Yellowish or pinkish-white powder, odorless, and having an acid taste. Soluble in about 4 parts of water at 25°; alcohol dissolves the citric acid, leaving a residue which is nearly insoluble in water, aqueous solutions are strongly acid to litmus and become turbid on heating.

3. An aqueous solution of the salt, on addition of an excess of ammonium sulphide T. S. gives, on standing, a salmon-colored precipitate, soluble in acetic acid.

4. On heating a powdered mixture of about 0.1 gm. of the salt and about 0.5 gm. of potassium bisulphate, pungent vapors of acrolein will be evolved.

5. No yellow turbidity should be immediately produced on mixing 5 cc. of an aqueous solution of the salt (1 in 20) with 10 cc. of ammonium molybdate T. S., but on prolonged standing or on heating a yellow precipitate will be formed (limit of phosphate).

6. The aqueous solution (1 in 20) should not be rendered more than slightly turbid by barium chloride or silver nitrate, after acidulation with nitric acid, nor should it respond to the Time Limit Test for heavy metals (U. S. P. VIII), after acidulation with hydrochloric acid, addition of ammonia water to be omitted.

7. Ten cc. of an aqueous solution (1 in 200), boiled after addition of a few drops of hydrochloric acid and chlorine water, should not be colored reddish by potassium sulphocyanate T. S.

8. Dissolve 0.4 gm. to 0.5 gm. of the salt accurately weighed in 100 cc. distilled water, add 10 cc. of ammonia water and 5 cc. of ammonium sulphide T. S. and boil the mixture until the precipitate formed has become a dirty green. Allow this to settle, then transfer to a filter and wash with hot water containing a few drops of ammonium sulphide T. S. Dry the filter and incinerate, first at a low temperature and then at strong red heat, in an open crucible until the weight is constant. The residue of manganomanganic oxide (Mn_3O_4) so obtained should correspond to 23.7 to 25.4 percent of the weight of the salt taken.

MANGANI ET SODII CITRATIS.

Manganese and Sodium Citrates.

1. It should contain, when rendered anhydrous at 120° C., from 49 to 51 percent of Manganous Citrate [$Mn_3(C_6H_5O_7)_2=542.87$], and from 48 to 51 percent of Sodium Citrate [$Na_3(C_6H_5O_7)=258.04$] as determined by the methods given below, and not more than 1 percent of impurities.

2. In yellowish or pinkish white powder or transparent scales, odorless, having a slight bitter and astringent taste. Permanent in the air.

3. Slowly soluble in about 4 parts of cold water; slightly more soluble in boiling water; nearly insoluble in alcohol or ether.

4. An aqueous solution of the salt (1-20) is neutral or slightly alkaline to litmus paper, but is not reddened by phenolphthalein T. S. The aqueous solution (1-10) after addition of slight excess of ammonia water yields with ammonium sulphide T. S. on warming a salmon-colored precipitate.

5. When strongly heated, the salt chars and finally leaves a green residue, consisting of sodium manganate, manganese oxides and

sodium carbonate, which imparts an intense yellow color to a non-luminous flame.

6. If 10 cc. of a 5 percent solution of the salt be slightly acidulated with acetic acid and mixed with 2 cc. of calcium chloride T. S. it should remain clear while cold, but yield a white, crystalline precipitate when heated to boiling.

7. Ten cc. of the aqueous solution (1-20) should not respond to the time limit test of the U. S. P. VIII for heavy metals, addition of ammonia water to be omitted.

8. Portions of 10 cc. each of an aqueous solution (1 in 200) should answer the following requirements: acidulated with hydrochloric acid it should not be more than slightly reddened by potassium sulphocyanate T. S. (limit of iron); and should not be rendered turbid at once by barium chloride T. S. (limit of sulphates); and acidulated with nitric acid it should show not more than an opalescence with silver nitrate T. S. (limit of chlorides).

9. If about 0.5 gm. of the salt be mixed with 5 cc. of sulphuric acid in a porcelain dish previously rinsed with sulphuric acid, the mixture protected from dust, and heated for 15 minutes on a water-bath, no color darker than yellow should develop (tartrates and other readily carbonizable substances).

10. Weigh accurately about 1 gm. of the salt previously dried at 120° C., carbonize it at a temperature not exceeding a low red heat and extract the residue with boiling water until the washings no longer have an alkaline reaction. Titrate the mixed filtrate and washings with half normal sulphuric acid V. S.; using methyl orange as indicator. Each cc. of half normal sulphuric acid corresponds to 0.043 gm. of $\text{Na}_2\text{C}_2\text{H}_3\text{O}_7$.

11. Dry the filter, and contents, from the preceding test and heat it strongly in an open crucible until the weight remains constant. The weight of manganous-manganic oxide (Mn_2O_3) obtained after subtraction of the weight of the filter ash, should be from 20.65 to 21.1 percent of the weight of the salt taken, corresponding to 49 to 51 percent of manganous citrate.

MENISPERMUM.

Yellow Parilla. (Canadian Moonseed.)

1. The dried rhizome and roots of *Menispermum Canadense*, Linné (*Fam. Menispermaceae*).

2. Occurring in pieces from a decimeter to

one or more meters in length and about 5 mm. in thickness, externally brown to yellowish-brown, internally yellowish, the surface finely wrinkled longitudinally, the nodes conspicuous; fracture tough and fibrous; bark rather thick; xylem broad, porous and usually longer on the lower side, the pith distinct; nearly odorless but with a bitter taste; roots very thin, brittle, much branched.

MYRICA.

Myrica Bark. (Bayberry Bark.)

1. The dried bark of the root of *Myrica cerifera*, Linné (*Fam. Myricaceae*), with not more than 5 percent of adhering wood.

2. In quills or quilled pieces or strips, of variable length and up to 20 mm. in breadth, the bark rarely exceeding 2 mm. in thickness; outer surface varying from dark-brown to gray-brown, occasionally slightly silvery, somewhat lustrous, at least in patches, bearing occasional warts or slight transverse ridges, the periderm frequently much wrinkled; inner surface deep rusty-brown, finely short-striated and roughish; fracture short and weak, light brown in the outer, yellowish brown in the inner layer; odor characteristic and rather disagreeable; taste astringent, mildly bitter and slightly acid.

PLUMBI CARBONAS.

Lead Carbonate. (White Lead.)

1. A mixture of lead carbonate and hydroxide approximately $(\text{PbCO}_3)_2\text{Pb}(\text{OH})_2 = 775.31$.

2. A heavy, white, opaque powder, or a pulverulent mass, without odor or taste. Permanent in the air.

3. Insoluble in water or alcohol, but soluble in acetic or diluted nitric acid, with effervescence.

3. When strongly heated, it turns yellow without charring, and, if heated in contact with charcoal, it is reduced to metallic lead.

4. If 2 gm. of the salt be dissolved in a mixture of 2 cc. of nitric acid and 10 cc. of water, it should not leave more than 0.02 gm. of residue.

5. This solution yields a black precipitate with hydrogen sulphide T. S., a yellow one with potassium iodide T. S., and a white one with diluted sulphuric acid.

6. On completely precipitating 10 cc. of the solution with hydrogen sulphide T. S., the filtrate should not leave more than 0.02 gm. residue on evaporating.

7. If 1 gm. of the salt be strongly ignited, in a porcelain crucible, it should leave a residue of lead oxide weighing not less than 0.85 gm.

PLUMBI OXIDUM RUBRUM.

Red Lead.

$Pb_3O_4=685.3$.

1. Lead orthoplumbate, Pb_2PbO_4 , containing usually some unconverted lead monoxide, PbO , and capable of yielding not less than 31 percent of lead dioxide, PbO_2 .

2. A heavy orange-red powder, without odor or taste. On exposure to the air it slowly absorbs moisture and carbon dioxide.

3. Almost insoluble in water, insoluble in alcohol, but soluble in excess of glacial acetic acid; also soluble in lactic acid with evolution of carbon dioxide and the odor of acetaldehyde.

4. When heated in a porcelain crucible, red lead changes through red and violet to a blackish tint, regaining its original color on cooling; but if the heating be continued, it slowly dissociates into lead monoxide and oxygen. When heated in contact with charcoal, it is reduced to metallic lead.

5. If 5 gm. of red lead be treated with 50 cc. of 10% nitric acid, it should react with but little effervescence (limit of carbonate), and without the development of the odor of nitrous acid (absence of lead), leaving a brown insoluble residue of lead dioxide, PbO_2 , which, upon the addition of solution of hydrogen dioxide, should dissolve with evolution of oxygen to a colorless solution, leaving, after boiling 15 to 20 minutes and cooling, a residue weighing not more than 0.2 gm. (limit of silicates, lead sulphate, etc.).

6. The solution obtained in the last test yields, with hydrogen sulphide T. S. a black precipitate, with potassium iodide T. S. a yellow one, and with diluted sulphuric acid a white precipitate, the latter two being soluble in a strong solution of sodium hydroxide.

7. If from the solution in diluted nitric acid, obtained by the aid of hydrogen dioxide, the lead be precipitated with sulphuric acid, the filtrate, after the addition of an excess of ammonia water, be diluted to 200 cc., a portion should not assume more than a slight bluish tint (limit of copper), nor yield more than traces of a reddish brown precipitate (limit of iron).

8. If a mixture of 1 gm. of red lead with

50 cc. of water be heated to boiling, and, after cooling, filtered, the filtrate should be colorless, and should not show more than a faintly alkaline reaction with red litmus paper, and when evaporated to dryness, should not leave more than 0.01 gm. of residue (limit of soluble impurities).

9. If 1 gm. of red lead be added to a cool solution of 40 gm. of crystallized sodium acetate and 2 gm. of potassium iodide in 50 cc. of 50% acetic acid, and the mixture well stirred until all red lead has dissolved, the solution, on titration, should require not less than 25.93 cc. of tenth-normal sodium thiosulphate V. S. (equivalent of 31 percent lead dioxide).

ENTERPRISE PAYS.

When your employer finds that you have a lot of enterprise, that you are trying to learn as much about his business as he knows himself, he will begin to think that you are made of promotion material. But if he sees that your ambition is just to get your salary and have as easy a time as you can, you will never attract his attention, except for a possible blacklist. An employer wants no deadwood around him. He wants live wires. He wants employes who have ambition enough to be willing to pay the price for promotion.

The first thing the successful employe must realize is that he is really working for himself. Every bit of work he does heartily, honestly, thoroughly, is developing his own capacity, making him a bigger, broader, more capable man. If he robs his employer of time or energy, he is robbing himself more, because he is practicing dishonesty, and cultivating a weakness that will slowly undermine his character and destroy his reputation for trustworthiness.

The men who have done great things in the world have been prodigious workers, particularly during the time when they were struggling to establish themselves in life.

Young men who are sticklers for hours, who are afraid of working overtime, who want to leave the office on the minute or a little before, who are always a little late in the morning, or who take their employer's time for their own personal uses—such employes never get very far.—*Orison Swett Marden*.