

the Starch, we usually start the stop-watch or chronograph when half of the solution has run out of the pipette. When a first-class sample of Malt Extract is used, the contents of the first test-tube will be of a blue colour, the second will be red and the third or fourth yellow, but the changes will be somewhat slower in a sample which is not so good.

Six of the best known brands of Malt Extract examined by this test ceased to produce a red colour at the end of three, four, six, eight, fourteen, and fifteen minutes respectively, showing a variation of from three to fifteen minutes, in the digestion of *their own weight* of Starch. A fluid Malt Extract, containing Alcohol, ceased to give a red colour at the end of thirty-five minutes.

The best sample, when treated with *five times* its weight of Starch, ceased to produce a red colour at the end of fourteen minutes.

It is important that the conditions should be the same in each experiment, for any variation in the quantity of Iodine to the volume of liquid employed will affect the results, but under the conditions given, when the colours are viewed in series, two independent workers should not vary more than 1 minute in the reading.

MALT EXTRACT WITH COD LIVER OIL.—This is supplied under several well-known brands, but can be prepared extemporaneously by thinning ordinary Malt Extract with 10 to 15 p.c. of water, heating the mixture to 120° F., adding the oil and shaking thoroughly until mixed. The commercial product contains from 20 to 30 p.c. of Cod Liver Oil.

Malt Extract with Cod Liver Oil. Examination of commercial samples gave from 20 to 30 p.c. of Oil by volume.—*P.J.* (3), xxv. 162.

Prescribing Note.—Usually given in Milk.

EXTRACTUM MALTI FERRATUM (*G.H.*).—Pyrophosphate of Iron 2 parts, Water 3 parts. Dissolve and add Extract of Malt 95 parts. Mix. Dose.—1 to 4 drm. Each fl. drm. contains about 1 grain Pyrophosphate of iron.

CADINUM OLEUM.

OIL OF CADE.

B.P.Syn.—JUNIPER TAR OIL.

An empyreumatic oily liquid obtained by the destructive distillation of the woody portions of *Juniperus Oxycedrus*, and some other species.

Solubility.—Mixes in all proportions with Chloroform and Ether; partially soluble in Alcohol (90 p.c.); slightly soluble in Water.

Medicinal Properties.—Used as a stimulant in cases of psoriasis and of chronic eczema.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Fr., Hung., Norw., Port., Span. (Aceite de Enebro), Swed., Swiss, and U.S.; not in the others.

Description.—A dark reddish-brown or nearly black, more or less viscid, oily liquid, with a not unpleasant empyreumatic odour and an aromatic bitter and acrid taste.

Tests.—Sp. gr. about .990. The filtered aqueous solution is almost colourless and possesses an acid reaction.

In a sample examined by us (sp. gr. .996), the acidity amounted to .7 p.c. pure Acetic Acid.

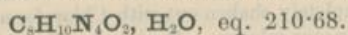
The composition of Juniper Tar compared with that of pine, beech, birch, and aspen.—*B.M.J.E.* '97, ii. 83.

CAFFEINA.

CAFFEINE.

B.P. Syn.—THEINE.

CAFFEINA in some of the foreign Pharmacopœias.



An alkaloid, usually obtained from the dried leaves of *Camellia Thea*, or the dried seeds of *Coffea Arabica*. Crystallised from aqueous solution, it contains one molecule of water.

The quantities yielded are about as follows: Tea Leaves 3 p.c., Coffee Seeds 1 p.c., Guarana 5 p.c., Paraguay Tea .5 p.c., Kola Nut 3 p.c. Some physicians have suspected physiological differences in the alkaloids obtained from the different botanical sources.

Information regarding the extraction of alkaloid from Tea Leaves is contained in a B.P. Conference paper ('52), and the discussion following it.—*P.J.* (3) xxiii. 213.

Solubility.—1 in 68 of Water; 1 in 40 of Alcohol (90 p.c.); 1 in 7 of Chloroform; 1 in 400 of Ether; 1 in 1 of Boiling Water.

Medicinal Properties.—A valuable heart tonic and diuretic, especially in cases of loss of compensation with cardiac dropsy.

Given in 1 grain doses every hour for migraine and hemicrania; also in the form of **Effervescent Caffeine Citrate** containing 1 grain in each drachm.

Its action differs from Digitalis in that it is much more rapid and entirely free of tendency to become cumulative. It should not be taken towards night for fear of causing sleeplessness.—*L.* '85, i. 188, 235, 322.

Specially valuable in spasmodic asthma and allied affections. In 5 grain doses every four hours.—*Pr.* liv. 318.

Dose.—1 to 5 grains.

Ph. Ger. maximum single dose has been raised in latest edition from 3 to 7½ grains.

Prescribing Notes.—Given in **cachets**, in **mixtures**, or in pills made with Glucose; also in the form of **effervescent preparations**. For hypodermic use Discs are prepared, ½ grain in each.

Official Preparations.—Caffeinæ Citras, Caffeinæ Citras Effervescens.

Not Official.—Caffeinæ Hydrobromidum, Caffeine Iodides, Caffeinæ Sodio-Salicylas, Caffeine Valerianas, Pilula Caffeinæ.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex., Port., Russ., Span., Swed., Swiss and U.S.; not in Norw.

Description.—Colourless, silky, acicular, inodorous crystals. Soluble in 80 parts of cold Water, the solution having a faintly bitter taste and being neutral to Litmus.

Tests.—It dissolves without colour in Sulphuric and Nitric Acids. At 212° F. (100° C.) the crystals lose 8.49 p.c. of their weight, and at a higher temperature melt and volatilise without decomposition. Treated with a crystal of Potassium Chlorate and a few drops of Hydrochloric Acid, and the mixture evaporated to dryness in a porcelain dish, a reddish residue results, which becomes purple when moistened with Solution of Ammonia. In an aqueous solution of the alkaloid, Tannic Acid gives a white precipitate

soluble in excess of the reagent, but no precipitate is caused by Solution of Potassium Iodide containing Mercuric Iodide (distinction from other official alkaloids).

Although 8.49 is the theoretical percentage of Water, commercial Caffeine generally loses about 7 p.c. on drying. Anhydrous Caffeine melts at about 232° C.

Caffeine may be completely shaken out with Chloroform from a slightly acid or slightly ammoniacal aqueous solution. It gives no alkaloidal reaction with Iodine in Potassium Iodide. When, however, the Wagner's reagent is either followed or preceded by the addition of some dilute mineral Acid, there is at once thrown down a dark-reddish precipitate. Upon this reaction is based a method for the estimation of Caffeine.—*C.N.* '97, 99.

Preparations.

CAFFEINÆ CITRAS. CAFFEINE CITRATE.

An unstable compound, $C_8H_{10}N_4O_2$, $C_6H_8O_7$; (eq. 383.42), prepared from Caffeine and Citric Acid.

Dissolve Citric Acid 1, in Distilled Water 2, and stir Caffeine 1, into the heated solution; evaporate to dryness on a water bath, constantly stirring towards the end of the operation. Reduce to a fine powder.

Solubility.—1 in 32 of Water; 1 in 22 of Alcohol (90 p.c.); 1 in 10 of a mixture of 2 parts Chloroform with 1 part Alcohol (90 p.c.).

Dose.—2 to 10 grains.

Foreign Pharmacopœias.—Official in Hung., Mex., Span., Swiss and U.S.; not in the others.

Description.—A white inodorous powder with an acid and faintly bitter taste and an acid reaction on Litmus.

Lloyd stated (*New Remedies* '81, 38) that he was unable to obtain from aqueous or alcoholic solutions a Citrate of Caffeine from which the alkaloid could not be dissolved by Chloroform, and it has lately been re-asserted (*P.J.* (3) xxiii. 219) that the B.P. Citrate is only a mixture; but (as stated in a former edition) we find that, on boiling the product of the B.P. process with Chloroform, scarcely anything is extracted. The Citric Acid and Caffeine may therefore be assumed to be in chemical combination; but as, on the addition of Water, the salt is decomposed with liberation of free Caffeine, the solubility of which is scarcely affected by the Citric Acid, the advantage of the combination is not obvious.

Tests.—With 3 parts of Water it forms a clear syrupy solution, but more Water dissociates the salt and affords a white precipitate of Caffeine which redissolves when excess of Water is added. Heated in the air, the salt is charred and then burnt, leaving a mere trace of ash. It affords the reactions mentioned under 'Caffeine,' and also those characteristic of Citrates.

CAFFEINÆ CITRAS EFFERVESCENS. EFFERVESCENT CAFFEINE CITRATE. (NEW.)

Sodium Bicarbonate, in powder, 51; Tartaric Acid, in powder, 27; Citric Acid, in powder, 18; Refined Sugar, in powder, 14; Caffeine Citrate, 4. Mix the Caffeine Citrate, Tartaric Acid, and Citric Acid; with this product thoroughly incorporate the mixed Sodium Bicarbonate and Refined Sugar; place in a dish or pan of suitable form heated to between 200° and 220° F. (93.3° and 104.4° C.). When the mixture,

by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 130° F. (54.4° C.). The product should weigh about 100.

Dose.—60 to 120 grains.

Foreign Pharmacopœias.—Official in U.S. containing 1 p.c. of Caffeine.

Not Official.

CAFFEINE HYDROBROMIDUM.—The 'commercial article' sold under this name used to be nothing more than Caffeine with about 1 per cent. of Hydrobromic Acid. It can be obtained in translucent masses having the composition $C_8H_{10}N_4O_2HBr \cdot 2H_2O$, containing 68 p.c. of Hydrated Caffeine. Being a crystallisable salt of definite composition, it has been recommended (*P.J.* (3) xxiii. 220) as superior to the B.P. Citrate, but as it is instantly decomposed into free Caffeine and Hydrobromic Acid on contact with Water, it has obviously no advantage over the Citrate in this respect.

Solubility.—1 in 52 of Water.

Dose.—1 to 4 grains.

Prescribing Notes.—It is also prescribed as **Effervescent Caffeine Hydrobromide** containing 1 grain of the Hydrobromide in each drachm.

CAFFEINE IODIDES.—There are three well-defined compounds containing Iodine and Caffeine. (1) The normal Hydriodate, $C_8H_{10}N_4O_2.HI$, forming almost colourless crystals, decomposed by Water into free Caffeine and Hydriodic Acid. (2) The Hydriodide combined with one atom of Iodine, to form reddish-brown crystals $C_8H_{10}N_4O_2.HI.I$, rapidly decomposed by Water. (3) The compound generally known as **Tri-iodide**, but really **Di-iodo-Hydriodide**, $C_8H_{10}N_4O_2.HI.I_2.H_2O$, described *C.D.* '90, i. 636. It forms prismatic crystals, steel-blue by reflected and red by transmitted light. On the addition of Water it is slowly decomposed with liberation of Iodine. Dose.—1 to 3 grs. in pill, with Glucose and Pulv. Acacie.

Higher compounds of Iodine than these are formed, but their composition is less definite, and the excess of Iodine can be removed with dry Chloroform. Nos. 2 and 3 do not colour Chloroform except in the presence of Water.

CAFFEINE SODIO-SALICYLAS.—An amorphous white powder, which is practically a mixture of Caffeine and Sodium Salicylate containing rather more than half its weight of Caffeine.

Solubility.—1 in 1 of Water; 1 in 28 of Alcohol (90 p.c.).

Foreign Pharmacopœias.—Official in Dutch (*Salicylas Natriicus cum Coffeino*), Hung., Norw. (*Salicylas Natrico-Coffeicus*), and Swiss; not in the others.

Medicinal Properties.—The same as Caffeine, but being much more soluble is more easily absorbed; it is also suitable for **hypodermic injection**. Has been used in sea-sickness.—*B.M.J.* '87, ii. 768.

The solubility of Caffeine in Water is also increased by Sodium Benzoate as well as by Antipyrin.

CAFFEINE VALERIANAS.—Theoretically it should contain 32 p.c. of Valerianic Acid. Commercially it varies from 1 p.c. (or less) to 13 p.c., this latter being very exceptional and only found in one or two German samples. The majority are little more than Caffeine scented with Valerianic Acid. The difficulty in forming a true salt is so great that it only exists as a chemical curiosity; but for all purposes of practical dispensing, a product obtained by absorbing 1 of Anhydrous Valerianic Acid by 4 of *Anhydrous* Caffeine is superior to anything commercially obtainable.

CAJUPUTI OLEUM.

OIL OF CAJUPUT.

The Oil distilled from the leaves of *Melaleuca Leucadendron*.
Imported from Batavia and Singapore.

Solubility.—In all proportions of Alcohol (90 p.c.).

Medicinal Properties.—A powerful topical and general stimulant, antispasmodic, and diaphoretic. Efficacious in chronic rheumatism, hysteria, flatulent colic, and other spasmodic and nervous affections, and in debility. Externally, diluted with Olive Oil (1 to 2), used to allay chronic rheumatism and gout pains. Applied on lint for toothache.

Dose.— $\frac{1}{2}$ to three minims.

Prescribing Notes.—Given on Sugar, or in Pill (*see* p. 484), or in the form of Spirit of Cajuput.

Official Preparations.—Spiritus Cajuputi; contained in Linimentum Crotonis.

Foreign Pharmacopœias.—Official in Belg., Dan., Dutch (also Depuratum), Fr., Ital., Jap., Norw., Port., Russ., Span. (Esencia de Cayeput), Swed., Swiss and U.S.; not in Austr. or Hung.

Description.—Bluish-green, with an agreeable penetrating camphoraceous odour, and an aromatic bitterish camphoraceous taste.

Should contain about 55 to 65 p.c. of Cineol (Eucalyptol).

The colour is generally supposed to be due to traces of Copper, this metal being almost invariably found in it.

On shaking 5 c. c. of the Oil with 5 c. c. of Water containing a drop of Diluted Hydrochloric Acid, the Oil loses its green tint and becomes nearly colourless.—*U.S.*

Tests.—Sp. gr. from .922 to .930. It should become semi-solid on being stirred, when cold, with a third or half its volume of Phosphoric Acid of commerce of sp. gr. 1.750 (presence of a due proportion of Cineol).

Preparation.

SPIRITUS CAJUPUTI. SPIRIT OF CAJUPUT. (ALTERED.)

Oil of Cajuput, 1; Alcohol (90 p.c.), a sufficient quantity. To the Oil of Cajuput add enough of the Alcohol to form 10 of the Spirit of Cajuput. = (1 in 10).

Now 1 in 10 instead of 1 in 50, and Alcohol (90 p.c.) used in place of Rectified Spirit.

Dose.—5 to 20 minims.

This Spirit of Cajuput contains five times the proportion of Oil of Cajuput present in the Spirit of Cajuput of the British Pharmacopœia of 1885.

(Not in the other Pharmacopœias.)

Not Official.**CALAMINA PRÆPARATA.**

PREPARED CALAMINE.

Native Zinc Carbonate, calcined in a covered earthenware crucible at a moderate temperature, powdered and freed from gritty particles by elutriation.

Genuine Calamine has a yellowish-grey colour; the reddish varieties are generally made on a basis of Barium Sulphate.—*P.J.* (3) xvi. 264, 692; (3) xvii. 797; (3) xx. 475; (3) xxii. 744.

Medicinal Properties.—Mildly astringent, used in face lotions and dusting powders.

Foreign Pharmacopœias—Port.; not in the others.

Preparations.

LINIMENTUM CALAMINÆ (*G.H.*).—Prepared Calamine, 20 grains; Zinc Oxide 15 grains; Lime Water, 4 fl. drm.; Olive Oil to 1 fl. oz.

LOTIO ZINCI OXIDI (*B.S.H.*).—Zinc Oxide, 60 grains; Prepared Calamine, 60 grains; Glycerin, 60 minims; Water, 1 fl. oz.

A mild astringent in chronic eczema and acne rosacea.

Not Official.

CALCIUM.

Ca, eq. 39·71.

Calcium, a brilliant white combustible metal, was discovered by Sir Humphrey Davy in 1808. Sp. gr. 1·5.

CALCII CARBONAS. See CRETA PRÆPARATA.

CALCII CARBONAS PRÆCIPITATUS.

PRECIPITATED CALCIUM CARBONATE.

B.P. Syn.—PRECIPITATED CHALK.

CaCO_3 , eq. 99·26.

The precipitate obtained by the interaction of Calcium Chloride and Sodium Carbonate.

Medicinal Properties.—Antacid, astringent, and desiccant. Used in dyspepsia with acidity; valuable in diarrhœa; as a dusting powder in eczema, and for ulcers and burns.

Dose.—10 to 60 grains.

Official Preparation.—Used in the preparation of Trochiscus Bismuthi Compositus.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex., Norw., Port., Russ., Swed., Swiss and U.S.; not in Span.

Description.—A white micro-crystalline powder, insoluble in Water.

The crystalline character of good commercial samples is not noticeable even under a magnification of 12 diameters.

Tests.—It affords the reactions characteristic of Calcium and of Carbonates. It should yield no characteristic reaction with the tests for Iron, Aluminium, Phosphates, and Sulphates, and only the slightest reactions with the tests for Magnesium or Chlorides.

Even the best commercial samples may be expected to contain traces of Chlorine. It should not exceed ·5 per cent.

CALCII CHLORIDUM.

CALCIUM CHLORIDE.

The salt, $\text{CaCl}_2, 2\text{H}_2\text{O}$ (eq. 145.85), formed by neutralising Hydrochloric Acid with Calcium Carbonate, carefully desiccated at a temperature not exceeding 392° F. (200° C.).

Solubility.—1 in 1 of Water; 1 in 3 of Alcohol (90 p.c.).

Medicinal Properties.—Alterative and deobstruent; given in glandular enlargements, especially those of tubercular origin. It increases the coagulability of the blood and is therefore used in gastric and intestinal hemorrhage; internally also for chilblains, 20 grains night and morning.

Given in pneumonia.—*Pr.* l. 263; liii. 343.

20 grains every 4 hours given in hæmophilia.—*L.* '97, ii. 1061.

Dose.—5 to 15 grains.

Incompatibles.—Lime salts and Potassium salts are mutually antagonistic physiologically.—*B.M.J.* '87, ii. 1033.

Official Preparations.—Used in the preparation of *Æther Purus*.

Foreign Pharmacopœias.—Official in U.S.; Hung., Calcium Chloratum Fusum; Belg., Chloruretum Calcii; Port., Chloreto de Calcio; Fr., Chlorure de Calcium; Ital., Cloruro di Calcio; Mex., Cloruro de Calcio; Span., Cloruro Calcico; not in the others.

Description.—In dry, white, very deliquescent masses.

Tests.—It affords the reactions characteristic of Calcium and of Chlorides. It should yield no characteristic reaction with the tests for Iron, Aluminium, or Carbonates, and only the slightest reactions with the tests for Magnesium. It evolves no Chlorine or Hypochlorous Acid on the addition of Hydrochloric Acid (absence of Hypochlorite).

Most samples are alkaline, probably owing to slight dissociation and loss of Hydrochloric Acid during the drying. One would not expect to find Hypochlorite in a sample dried at the temperature given above.

CALCII HYDRAS.

CALCIUM HYDROXIDE.

B. P. Syn.—SLAKED LIME.

$\text{Ca}(\text{HO})_2$, eq. 73.47.

Calcium Hydroxide, recently prepared by the interaction of Water and Calcium Oxide.

The Pharmacopœia directs that 'it should be recently prepared,' but this is unnecessary if air be excluded.

Solubility.—Sparingly soluble in Water (1 in 900); the solution, on exposure to the air, soon acquires a film of Calcium Carbonate.

Medicinal Properties.—Antacid, astringent, sedative. The **Solution** (Lime Water) is useful in acid and gouty dyspepsia; in vomiting and diarrhœa of children, especially if given with the milk as it renders the curd less dense; in enteric fever it lessens the chances of hæmorrhage; also in the form of diluted **saccharated**

solution to relieve chronic vomiting, and vomiting of pregnancy. The **Liniment of Lime** is applied to burns and scalds, *see also* Carron Oil.

Incompatibles.—Vegetable and mineral Acids, alkaline and metallic salts, Tartar Emetic.

Official Preparations.—Liquor Calcis and Liquor Calcis Saccharatus. Used in the preparation of Calcii Hypophosphis, Chloroformum, Extractum Ipecacuanhae Liquidum. **Lime Water** is used in the preparation of Argenti Oxidum, Linimentum Calcis, Lotio Hydrargyri Flava and Lotio Hydrargyri Nigra.

Not Official.—Liniment for freckles.

Foreign Pharmacopœias—Official in Fr., Chaux Éteinte; not in the others.

Tests.—It affords the reactions characteristic of Calcium. Strongly heated it loses nearly one-fourth of its weight of Water. It should yield only the slightest characteristic reactions with the tests for Iron, Aluminium, Magnesium, Sodium, Potassium, Carbonates, Chlorides, Phosphates, Sulphates, or Silica.

Preparations.

LINIMENTUM CALCIS. LINIMENT OF LIME.

Solution of Lime, 1; Olive Oil, 1: shake together. = (1 in 2).

Foreign Pharmacopœias.—Official in Belg., Solution of Lime and Almond Oil equal parts; Fr. (Linim. Calcaire) Solution of Lime and Almond Oil equal parts; Ital., Lime Water and Olive Oil equal parts; Jap. and Mex., Lime Water 1, Sesame Oil 1; Port., Lime Water 9, Oil of Almonds, 1; Span., Lime Water 2, Oil of Almonds 1; Norw., Russ., Swed. and Swiss, and U.S., Solution of Lime and Linseed Oil equal parts; all by weight except U.S.; not in the others.

LIQUOR CALCIS. SOLUTION OF LIME. *B.P. Syn.*—LIME WATER.

Calcium Hydroxide, 1; Distilled Water, a sufficient quantity. Wash the Calcium Hydroxide with Distilled Water until free from Chlorides; then shake it with 80 of Distilled Water in a stoppered green glass bottle for two or three minutes; set aside for twelve hours. The clear Solution may be drawn off with a siphon as it is required for use, and should then be transferred to a green glass bottle.

1 fl. oz. contains the equivalent of about $\frac{1}{2}$ grain, or 1000 c.c. rather more than 1 gramme, of Lime, CaO.

When the Slaked Lime is good, one-fourth of the above quantity is sufficient.

Dose.—1 to 4 fl. oz.

Lime Water is best kept in full bottles and well closed from the air.

So-called aerated 'Lime Water' is sold in syphons, but we understand that it is aerated with Carbonic Acid Gas, and in that case the name is misleading.

Foreign Pharmacopœias.—Official in Austr., Belg., and Hung., Aqua Calcis; Dan., Dutch, Norw., and Swed., Solutio Hydratis Calcici; Fr., Eau de Chaux; Ger. and Jap., Aqua Calcariae; Mex. and Port., Agua de Cal; Russ., Calcaria Caustica Soluta; Span., Solucion de Cal; Swiss, Calcium Hydricum Solutum; U.S., Liquor Calcis.

Water becomes saturated with much less Lime than ordered in any of the Pharmacopœias therefore Liquor Calcis is of the same strength in all.

Tests.—24 c.c. should require for neutralisation 10 c.c. of the Decinormal Volumetric Solution of Sulphuric Acid. It should yield no characteristic reaction with the tests for Lead or for Chlorides.

1 fl. oz. precipitated with 1 grain of Oxalic Acid should not redden Litmus.—*Proctor.*

Lime Water, if saturated, should precipitate on boiling, owing to the Hydrate being less soluble in hot than in cold Water.

LIQUOR CALCIS SACCHARATUS. SACCHARATED SOLUTION OF LIME.

Calcium Hydroxide, 1; Refined Sugar in powder, 2; Distilled Water, 20; Mix the Calcium Hydroxide with a solution of the Refined Sugar in the Distilled Water. Set aside in a stoppered green glass bottle for a few hours, shaking occasionally; separate the clear solution with a siphon, avoiding unnecessary exposure to air.

=(about 1 in 62).

This Solution contains nearly 2 p.c. by weight of Lime, CaO, or about 8 grains in 1 fl. oz. 1 oz. = about 14 fl. oz. Lime Water.

The Calcium Hydroxide is now mixed with a Solution of Sugar as suggested in our former editions.

Dose.—20 to 60 minims.

Foreign Pharmacopœias.—Official in Hung., Aqua Calcis Saccharata; not in the others.

Tests.—Sp. gr. 1.055. 10 grammes should require for neutralisation 6.3 c.c. of the Volumetric Solution of Sulphuric Acid. It should not afford any characteristic reaction with the tests for Lead.

It has been shown that the colouration on keeping is due to the presence of Iron in the Lime employed, as when this is free from Iron no change takes place.—*P.J.* (3) xix. 849.

Like Lime Water, it precipitates on boiling, but clears again on cooling.

Not Official.

LINIMENT FOR FRECKLES.—Liniment of Lime, 8; Solution of Ammonia, 1; mix.

CALCII HYPOPHOSPHIS.

CALCIUM HYPOPHOSPHITE.

$\text{Ca}(\text{PH}_2\text{O}_2)_2$, eq. 168.83.

It is obtained by the interaction of Phosphorus, Calcium Hydroxide, and Water.

This is sometimes improved by re-crystallisation.

Solubility.—1 in 8 of Water, and scarcely more soluble in boiling Water. Insoluble in Alcohol (90 p.c.).

Medicinal Properties.—Similar to those of Phosphorus but without its unpleasant effects. Given in cases of nervous and general debility; it is by some supposed to be useful in phthisis.

Dose.—3 to 10 grains.

Prescribing Notes.—Usually given in mixtures or in one of the various forms of Syrup.

Not Official.—Glycerola Hypophosphitum, Syrupus Calcii Hypophosphitis (Squire) and Syrupus Calcii Hypophosphitis (B.P.C.).

Foreign Pharmacopœias.—Official in Belg., Hypophosphis Calcii; Dutch and Norw., Hypophosphis Calcicus; Fr., Hypophosphite de Chaux; Mex., Hipofosfito de Calcio; Port., Hypophosphito de Cal; Span., Hipofosfito Calcico; Jap., Russ. and Swiss, Calcium Hypophosphorosum; U.S.; not in the others.

Description.—A white crystalline salt, with a pearly lustre, and a bitter nauseous taste.

Tests.—Heated to redness the crystals ignite, evolving spontaneously inflammable Hydrogen Phosphide and Hydrogen, and leave a reddish-coloured residue. It affords the reactions characteristic of Calcium. Its aqueous solution yields with Test-solution of Mercuric Chloride a white precipitate turning grey. .25 gramme boiled for ten minutes with a solution of .6 gramme of Potassium Permanganate should yield, on filtration, a nearly colourless solution. The salt should yield no characteristic reaction with the tests for Lead, Copper, Arsenium, Iron, Aluminium, Magnesium, Sodium, or Potassium, and only the slightest reactions with the tests for Chlorides or Sulphates. It should afford little or no precipitate with Solution of Lead Acetate (limit of Phosphates and Phosphites).

We do not believe a commercial sample can be found which does not give more or less precipitate or turbidity with Lead Acetate, which, by the way, also precipitates Sulphates and Sulphites.

Tyrer suggests the estimation of Hypophosphites by reduction of Copper Solution, previously eliminating any impurity which is likely to affect the result by treatment with Barium Chloride Solution.—*P.J.* '97, ii. 150. Jowett points out that Barium Phosphite is slightly soluble in water, which would affect results obtained by Tyrer's process, and proposes the following method:—

About .3 gramme of the dried salt is dissolved in 10 c.c. of water, 3 c.c. of a 10 p.c. solution of Lead Acetate added, and the mixture allowed to stand twelve hours. It is then filtered, the precipitate thoroughly washed, and the washings added to the filtrate, which is acidified with Hydrochloric Acid, and then saturated with Hydrogen Sulphide, boiled, filtered, and the Lead Sulphide thoroughly washed.

The mixed washings and filtrate are then evaporated to a low bulk and 5 c.c. Hydrochloric Acid and 1 gramme Potassium Chlorate added and gently heated for half an hour, then concentrated to about 20 c.c., and the Phosphate finally determined either gravimetrically or volumetrically by the usual method.—*P.J.* '98, ii. 173; *C.D.* '98, ii. 300.

Not Official.

GLYCEROLA HYPOPHOSPHITUM.—Calcium, Potassium, and Sodium Hypophosphites, of each 1; dissolve these in Water 40; filter and add Sugar 40; Orange-flower Water 2; Cherry-laurel Water 2; dissolve and add Glycerin 12, and filter.

Dose.—1 to 2 fl. drms.

(U.S. Syrupus Hypophosphitum, containing these three Hypophosphites.)

SYRUPUS CALCII HYPOPHOSPHITIS (SQUIRE).—Calcium Hypophosphite, 4; Water, 38; Sugar, 59.

Dose.—1 fl. drm., containing 3 grains.

A Syrup of this strength was introduced in the '*Companion*,' 1877.

The following Syrup inserted in *B.P.C.* (taken from Extra Pharmacopœia '90), is

only one-third the strength, necessitating an excessive quantity of Syrup for a full dose of the salt.

SYRUPUS CALCII HYPOPHOSPHITIS (*B.P.C.*).—Calcium Hypophosphite, 160 grains; Distilled Water, 9 fl. oz.: dissolve and filter. To the filtered solution add Refined Sugar in coarse powder, 16 oz.: dissolve with the aid of heat, strain, and after cooling add Hypophosphorous Acid, 20 minims; Distilled Water, sufficient to produce 20 fl. oz.: mix.

Each fl. drm. contains 1 grain of Calcium Hypophosphite.

Dose.—1 to 4 fl. drm.

Not Official.

CALCIUM GLYCERO-PHOSPHAS.

A white crystalline powder, prepared by the action of Milk of Lime on Glycerophosphoric Acid and purified by treatment with Alcohol.

Solubility.—1 in 22 of Water, less soluble in warm Water, and almost insoluble in boiling Water; insoluble in Alcohol.

Medicinal Properties.—It increases the general nutrition of the body in certain forms of neurasthenia.

Dose.—5 to 15 grains dissolved in Water.

Foreign Pharmacopœias.—Official in Mex., Glicerofostao de Calcio.

Tests.—It is distinguished from Calcium Phosphate by its solubility in Water. Its freedom from uncombined Glycerin is ascertained by treatment with Absolute Alcohol and filtration, the Alcohol should leave no residue on evaporation.

For the determination of the Phosphoric Acid a definite weight of the Glycerophosphate is dissolved in water neutralised with decinormal volumetric solution of Sulphuric or Hydrochloric Acid, using Methyl Orange as indicator, and the solution then titrated with a standard solution of alkali and Phenol-phthalein.—*Analyst* '98, 45.

Commercial samples vary considerably in composition.—*P.J.* '98, i. 24; *J.S.C.I.* '93, 66, 266.

CALCII PHOSPHAS.

CALCIUM PHOSPHATE.

May be prepared by dissolving Bone Ash in Dilute Hydrochloric Acid, adding the liquid to dilute Solution of Ammonia, washing the precipitate with cold Water, and drying the washed precipitate at a temperature not exceeding 212° F. (100° C.); or by the interaction of Calcium Chloride and Sodium Phosphate.

Solubility.—Insoluble in Water; soluble in Diluted Hydrochloric Acid or Diluted Nitric Acid.

Medicinal Properties.—For rickets and mollities ossium, and other conditions of malnutrition; said to be useful in serofulous affections, to promote union of bone fractures, in tardy teething, and in anæmia; given to counteract the draining of phosphates during pregnancy and lactation, and to prevent decay of the teeth and toothache during pregnancy.

Dose.—5 to 15 grains.

Prescribing Notes.—More commonly ordered in smaller doses. Given as a

powder, or in the form of Syrup. Squire's Chemical Food is an elegant and useful form.

Official Preparation.—Contained in *Extractum Euonymi Siccum* and *Pulvis Antimonialis*.

Foreign Pharmacopœias.—Official in Austr., Ger., Hung., Russ. and Swiss, Calcium Phosphoricum; Belg. and Dutch, *Phosphas Calcicus*; Dan., *Phosphas Calcicus Præcipitatus*; Fr., *Phosphate de Chaux*; Ital., *Fosfato Bicalcic*; Jap., *Calcium Phosphoricum Præcipitatum*; Mex., *Fosfato de Calcio*; Port., *Phosphato de Cal*; Span., *Fosfato Calcico*; U.S., *Calcii Phosphas Præcipitatus*; not in Norw. or Swed.

Description.—A light white amorphous powder.

Tests.—Insoluble in Water, but soluble in Diluted Hydrochloric Acid or Diluted Nitric Acid; such a solution continues clear when a dilute solution of Sodium Acetate is added in excess (absence of Calcium Oxalate). It affords the reactions characteristic of Calcium and of Phosphates. Of the recently dried powder, 1 gramme dissolved in Diluted Hydrochloric Acid yields, when added to a very slight excess of diluted Solution of Ammonia, a white precipitate weighing when washed with cold Water and dried at 212° F. (100° C.), not less than .95 gramme. It should yield no characteristic reaction with the tests for Lead, Copper, Arsenium, Iron, Aluminium, Magnesium, Carbonates, or Silica, and only the slightest reactions with those for Chlorides.

Not Official.

CALCII SULPHAS.

CALCIUM SULPHATE.

SULPHATE OF LIME. CALCINED GYPSUM. PLASTER OF PARIS.

Native Calcium Sulphate ($\text{CaSO}_4, 2\text{H}_2\text{O}$, eq. 170.81) rendered nearly anhydrous by heat.

Foreign Pharmacopœias.—Official in Austr., Dan., Ger., Hung., Norw., Russ., Swed., Swiss and U.S.; not in the others.

The native salt is used for the preparation of *Calx Sulphurata*.

Not Official.

CALENDULA.

COMMON MARIGOLD.

The florets of *Calendula officinalis*.

Foreign Pharmacopœias.—Official in Span., flowers; U.S., flowering herb; not in the others.

Preparation.

TINCTURA CALENDULÆ FLORUM.—Marigold flowers, dried, in No. 20 powder, 4; Alcohol (60 p.c.), sufficient to percolate 20.

Medicinal Properties.—Used as an application for sprains and bruises.

Dose.—5 to 20 minims.

Foreign Pharmacopœias.—Official in U.S., 1 in 5; not in the others.

This has been added to the B.P.C. formulary.

CALUMBÆ RADIX.

CALUMBA ROOT.

The dried transversely cut slices of the root of *Jateorhiza Columba*. From the forests of Eastern Africa between Ibo and the Zambesi. It is easily reduced to powder, which has a greenish tinge; it becomes browner with age, and deepens in colour when it is moistened.

Medicinal Properties.—A bitter stomachic and tonic, useful in atonic dyspepsia, in promoting appetite and removing flatulence. Given in convalescence from acute diseases, combined with alkalis or Bismuth.

Prescribing Notes.—Given in the form of Infusion, Liquor Concentratus, or Tincture with other medicines. It is one of the few bitters that can be given with salts of Iron.

Official Preparations.—Infusum Calumbæ, Liquor Calumbæ Concentratus, and Tinctura Calumbæ.

Not Official.—Extractum Calumbæ.

Foreign Pharmacopœias.—Official in all.

Description.—In irregular flattish circular or somewhat oval slices depressed, towards the centre; from about an inch to two inches (two and a half to five centimetres) or more in diameter, and from one-eighth to half an inch (three to twelve millimetres) or more in thickness; more or less uniformly yellow in colour. The cork is brownish and wrinkled, the cortex thick, marked with radiating lines, and separated by a dark line from the wood, in which the vessels are arranged in narrow radially elongated groups. The parenchymatous tissue is largely developed, and contains numerous starch grains mostly simple with eccentric hilum. The fracture is short, odour feeble, taste bitter.

A fluorescent constituent of Calumba.—*P.J.* '95, ii. 495.

Calumbin crystallises in colourless needles, insoluble in hot or cold water, cold Alcohol, or Ether, but readily soluble in boiling Ether or Alcohol. Calumbin melts at 182° C., is neutral, anhydrous, and has a composition represented by the formula, $C_{21}H_{24}O_7$.—*P.J.* '96, ii. 378.

Preparations.**INFUSUM CALUMBÆ.**—INFUSION OF CALUMBA. (MODIFIED.)

Calumba Root, thinly sliced, 1; Distilled Water, cold, 20: infuse for half an hour; strain. = (1 in 20).

The Calumba Root is ordered to be thinly sliced, not cut small.

Dose.— $\frac{1}{2}$ to 1 fl. oz.

Foreign Pharmacopœias.—Official in Span., 1 in 100; not in the others.

Prescribing Notes.—Calumba Root contains starch and mucilage, both of which are dissolved by hot Water; cold Water dissolves the mucilage only.

Physicians prescribing for patients who wish to take with them a supply of their medicines containing Infusion of Calumba will find 1 drachm of Tincture to be of about the same strength as 1 oz. of the Infusion.

LIQUOR CALUMBÆ CONCENTRATUS. CONCENTRATED SOLUTION OF CALUMBA. (NEW.)

Calumba Root, in No. 5 powder, 10; Alcohol (90 p.c.) 4 $\frac{1}{2}$; Distilled

Water a sufficient quantity. Macerate the Calumba for 24 hours with 10 of Distilled Water; press strongly; again macerate the residue for 24 hours with 10 of Distilled Water; press strongly. Mix the expressed liquids, and heat for 5 minutes to 180° F. (82·2° C.). When cold add the Alcohol; set aside; decant or filter, adding sufficient Distilled Water to produce 20 of the Concentrated Solution.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

TINCTURA CALUMBÆ. TINCTURE OF CALUMBA. (ALTERED.)

Calumba Root, in No. 20 powder, 1; Alcohol (60 p.c.) 10. Prepare by the maceration process. = (1 in 10).

Now 1 in 10 instead of 1 in 8, and Alcohol (60 p.c.) used in place of Proof Spirit.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Official in Belg., Fr., Mex., Port., Span. and Swiss 1 in 5; all by weight. U.S., 1 in 10; not in the others.

Not Official.

EXTRACTUM CALUMBÆ.—Calumba Root exhausted with Alcohol (60 p.c.) and the product evaporated to a pill consistence. 16 parts of Root yield 1 to 1 $\frac{1}{2}$ parts of Extract.

Dose.— $\frac{1}{2}$ to 2 grains.

Foreign Pharmacopœias.—Official in Austr. and Hung., made with 70 p.c. Alcohol; Belg., Fr., Ital., Mex. and Span., made with 60 p.c. Alcohol; Dutch, made with 90 p.c. Alcohol; Jap., made with 45 p.c. Alcohol; Port., made with 65 p.c. Alcohol; Swed., made with 50 p.c. Alcohol; U.S., **Fluid Extract** only, made with Dilute Alcohol; not in Dan., Ger., Norw. or Russ.

CALX.

LIME.

Calcium Oxide, CaO, eq. 55·59, obtained by calcining Chalk, Limestone, or Marble.

Solubility.—Decomposed by water forming Calcium Hydrate, under which heading the solubility is given.

Foreign Pharmacopœias.—Official in all.

Description.—In compact masses of a whitish colour, which readily absorb Water, and which, when rather less than their weight of Water is added, swell and fall to powder with the development of much heat.

Tests.—The powder obtained by this process of slaking, when agitated with Water, gives, after filtration, a clear alkaline solution which affords the reactions characteristic of Calcium. It should yield only the slightest characteristic reactions with the tests for Iron, Aluminium, Magnesium, Sodium, Potassium, Carbonates, Chlorides, Phosphates, Sulphates, or Silica.

Preparation.

CALCII HYDRAS. See p. 164.

CALX CHLORINATA.

CHLORINATED LIME.

A product obtained by exposing Slaked Lime to the action of Chlorine Gas until absorption ceases.

Solubility.—Partially soluble in Water and in Alcohol (90 p.c.). Decomposed by acids with formation of Hypochlorous Acid, which in the case of Hydrochloric Acid reacts with it to form Chlorine.

Medicinal Properties.—Chiefly used as a disinfectant; *see* also below, *Liquor Calcis Chlorinatæ*.

Official Preparations.—*Liquor Calcis Chlorinatæ*. Used in the preparation of Chloroform and *Liquor Sodæ Chlorinatæ*.

Foreign Pharmacopœias.—Official in Dan., Norw., Swed. and U.S., *Calx Chlorata*; Austr. and Russ., *Calcium Hypochlorosum*; Belg., *Hypochloris Calcii*; Fr., *Chlorure de Chaux Sec*; Ger., Hung., Jap. and Swiss, *Calcaria Chlorata*; Ital., *Cloruro di Calce*; Mex., *Hipoclorito de Calcio Impuro*; Port., *Cal Chlorada*; Span., *Hipoclorito Calcico Clorurado*; Austr., Dan., Hung., Jap., Norw., and Swed., contain 20 p.c. of available Chlorine; Ger., Russ. and Swiss, 25 p.c.; Ital., 28.6 p.c.; Belg., 31.77 p.c.; Fr. and Span., 32 p.c.; U.S., 35 p.c.; Port., not indicated; not in Dutch.

Description.—A dull white powder with a characteristic smell; it becomes moist and gradually decomposes on exposure to air. It is partially soluble in Water.

As it becomes moist and gradually decomposes on exposure to the air, it should be preserved in well-closed vessels in a cool and dry place.

Tests.—The solution affords the reactions characteristic of Calcium and Chlorides, decolourises Solution of Indigo Sulphate, and evolves Chlorine copiously upon the addition of an Acid. .5 gramme of Chlorinated Lime, mixed with 1.5 gramme of Potassium Iodide dissolved in 200 c.c. of Water, produces, when acidulated with 6 c.c. of Hydrochloric Acid, a reddish solution, which requires for the discharge of its colour at least 46.8 c.c. of the Volumetric Solution of Sodium Thiosulphate, corresponding to 33 p.c. of available Chlorine.

It should be noted that only a good and well-kept sample will yield this percentage of Chlorine.

In this test, the Hydrochloric Acid, acting on the Calcium Hypochlorite, liberates Chlorine, and this reacting on the Potassium Iodide sets free an equivalent quantity of Iodine, which, if the Chlorinated Lime be good, will require the stated quantity of Volumetric solution of Sodium Thiosulphate to convert it into colourless Sodium Iodide and Tetrathionate.

Preparations.

LIQUOR CALCIS CHLORINATÆ. SOLUTION OF CHLORINATED LIME.

Chlorinated Lime, 1; Distilled Water, 10; mix; transfer the mixture to a stoppered bottle; set aside for three hours, shaking occasionally; filter through calico. = (1 in 10).

Preserve the filtrate in a stoppered bottle in a cool and dark place.

Medicinal Properties.—A powerful disinfecting and bleaching agent. Not much employed internally; externally as a **lotion** to unhealthy ulcers, purulent ophthalmia, fetid cutaneous affections and scabies. As an **injection** in foul nasal and aural and vaginal discharges; as a **gargle** in septic tonsillitis, and diphtheria.

Antidotes.—In case of poisoning by Chlorinated Lime the antidotes are, Emetics, White of Egg, Milk, Flour; *not* Acids.

Foreign Pharmacopœias.—Official in Belg., 2·2 in 100; Fr., 1 in 45; Norw., 2 in 100; Russ (Calcium Hypochlorosum Solutum), 2·5 p.c. of Chlorine; Span. and Swed., 1 in 40; not in the others.

Tests.—Sp. gr. about 1·055. Each gramme mixed with ·5 gramme of Potassium Iodide dissolved in Water, when acidulated with 1 c.c. of Hydrochloric Acid, gives a brownish-red solution, which requires for the discharge of its colour not less than 5·6 c.c. of the Volumetric Solution of Sodium Thiosulphate, corresponding to 2 p.c. of available Chlorine.

The Solution should yield, when fresh, about 3 p.c. of available Chlorine.

CALX SULPHURATA.

SULPHURATED LIME.

A mixture containing not much less than 50 p.c. of Calcium Sulphide, **CaS.**, eq. 71·53, with Calcium Sulphate and Carbon. It may be prepared by reducing native Calcium Sulphate by means of Carbon.

Medicinal Properties.—Antisuppurative; useful for boils, pustules and small abscesses; also used as a depilatory.

Daily doses of 1 grain as a prophylactic of influenza.—*B.M.J.* '95, i. 975.

Dose.— $\frac{1}{4}$ to 1 grain.

Prescribing Notes.—Best prescribed in **pill**, made with Glucose. If the total weight of each pill be less than $\frac{1}{4}$ grain it is made up to this weight with Milk Sugar. The pills are coated with Sandarach solution.

Foreign Pharmacopœias.—Official in Austr., Belg., Dutch, Mex. and U.S.; not in the others.

Description.—A greyish-white powder with a smell of Hydrogen Sulphide.

Test.—If ·8 gramme be mixed with a cold solution of 1·4 grammes of Copper Sulphate in 50 c.c. of Water, and, after the addition of a little Hydrochloric Acid the mixture be well stirred and heated to a temperature approaching that of ebullition until all action has ceased, and then filtered, the filtrate should give no red colour with Solution of Potassium Ferrocyanide (presence of a due proportion of Sulphide).

The process described under Parisian Sulphide, p. 133, is also applicable to Calcium Sulphide.

CAMBOGIA.

GAMBOGE.

A Gum Resin, obtained from *Garcinia Hanburii*.

It is imported from Siam, and consists of about 75 p.c. of Resin and 15 to 20 of Gum, the Resin being the active ingredient.

Solubility.—About three-fourths is soluble in Alcohol (90 p.c.), the solution is rendered an opaque yellow by Water; three-fourths also soluble in Ether. The solution in Ammoniated Alcohol is not rendered turbid by the addition of Water.

Medicinal Properties.—A powerful hydragogue cathartic; in small doses, diuretic. It is employed in the treatment of dropsy, attended with obstinate constipation; and in cerebral congestion. As it is apt to occasion much sickness and griping, it is best given in small doses, repeated at short intervals, until it operates; but it should never be given to children or very old persons, or in inflamed conditions of the abdominal or pelvic organs.

Stimulates the intestinal glands, but not the liver.—Dr. Rutherford.

Dose.— $\frac{1}{2}$ to 2 grains.

Prescribing Notes.—It may be given in pill or emulsion or dissolved in an alkaline solution; the last method has been recommended in dropsical complaints.

Official Preparation.—Pilula Cambogiae Composita.

Foreign Pharmacopœias.—Official in Belg., Gummi Guttæ; Fr., Gomme Gutte; Ger. and Swiss, Gutti; Ital., Gomma Gotta; Mex., Goma Guta; Port., Gomma-Guta; Russ. Gummi Resina Gutti; Span., Gutagamba; Swed., Gummi-Resina Gutta; U.S., Cambogia; not in the others.

Description.—In cylindrical solid or hollow rolls, longitudinally striated on the surface, either distinct, or more or less agglutinated into masses; breaking with a conchoidal fracture, the fractured surface being dull, smooth, and of a uniform reddish-yellow colour; powder bright yellow; no odour; taste very acrid. When rubbed with Water it forms a yellow emulsion; it is completely dissolved by the successive action of Alcohol (90 p.c.) and Water.

Mode of extracting the Resin from the tree.—*Kew Bulletin*, June and July, '95.

Test.—When Solution of Iodine is added to a cooled aqueous decoction, the colour should not become distinctly green (absence of more than a trace of Starch). When incinerated it should not yield more than 3 p.c. of Ash.

B.P. should require a given standard soluble in Alcohol which might fairly be put at 75 p.c.

It dissolves in Petroleum Spirit (sp. gr. not under .700) with an intense yellow colour destroyed by alkalis, and if to the solution a few drops of Alcoholic Solution of Ferric Chloride be added, the Alcohol is coloured intensely black.—*C.D.* '86, i. 508.

Preparation.

PILULA CAMBOGÆ COMPOSITA. COMPOUND PILL OF GAMBOGE.
(MODIFIED.)

Gamboge, in powder, 1; Barbados Aloes, in powder, 1; Compound

Powder of Cinnamon, 1; Hard Soap, in powder, 2; Syrup of Glucose (by weight), 1 or a sufficient quantity: mix to form a mass.

=(1 in 6 nearly).

Now made with Syrup of Glucose in place of Syrup.

Dose.—4 to 8 grains.

Foreign Pharmacopœias.—Official in Fr. and Belg. (Pilule Anderson) Aloes, Gamboge, Oil of Anise, and Honey; Port. (Pilulas de Aloes e Gomma Guta), the same with Soap; Fr. has also Pilules de Bontius, containing Ammoniacum and Vinegar instead of Cinnamon and Soap; U.S. (Pil. Catharticae Comp.), contains Gamboge about 1 in 12; not in the others.

CAMPHORA.

CAMPHOR.

A white crystalline substance, obtained from *Cinnamomum Camphora*, purified by sublimation.

It is obtained in the crude state from Formosa and Japan, and is re-sublimed in this country and elsewhere.

Solubility.—1 in 700 of Water; 1 in $1\frac{1}{2}$ of Alcohol (90 p.c.); or by weight, 1 in 1; 4 in 1 of Chloroform; 12 in 7 of Ether; 1 in 4 of Olive Oil (slowly); 1 in $1\frac{1}{2}$ of Oil of Turpentine; 2 in 1 of Glacial Acetic Acid; insoluble in Alkalis. 3 of Camphor rubbed with 1 of Carbolic Acid crystals form a clear solution. 3 of Camphor and 3 of Hydrate of Chloral rubbed together liquefy.

Medicinal Properties.—A stimulant sedative; antispasmodic, carminative, expectorant, diaphoretic and anaphrodisiac. A feeble antiseptic.

Stimulant in the prostration of febrile diseases; sedative in mania, delirium tremens and chordee, also useful in dysmenorrhœa, spasmodic asthma and chronic bronchitis; in hysteria, nymphomania and spermatorrhœa. Spirit of Camphor mixed with warm Water to bathe the nostrils is highly useful in hay fever, and relieves irritation of the nostrils in common cold; also used as an **inhalation**. The **Compound Tincture** is given with Tincture of Squill to allay spasmodic cough in bronchitis and phthisis. In large doses Camphor tends to cause cardiac depression, convulsions, and possibly collapse.

Externally, it is used as a counter-irritant to relieve pain in chronic rheumatism and neuralgia; also in chronic eczema and other painful skin diseases.

10 grammes of a 10 p.c. solution of Camphor in Olive Oil hypodermically injected for collapse.—*B.M.J.E.* '95, ii. 63; *P.J.* '95, ii. 380.

Dose.—2 to 5 grains.

Prescribing Notes.—An excellent pill can be made by mixing Camphor, 36 grains; Curd Soap, 4 grains; Glycerin of Tragacanth, 10 grains; and dividing into 12 or more pills as required. Its unpleasant taste is covered well by milk. The **Spirit** is given on sugar, also in milk.

Symptoms of poisoning by Camphor: convulsions, lividity of countenance, stupor, arrest of urinary secretion.

Official Preparations.—Aqua Camphoræ, Linimentum Camphoræ, Lini-

mentum Camphoræ Ammoniatum, Spiritus Camphoræ and Tinctura Camphoræ Composita. Contained in Linimentum Aconiti, Linimentum Belladonnæ, Linimentum Opii, Linimentum Saponis, Linimentum Sinapis, Linimentum Terebinthinæ, and Unguentum Hydrargyri Compositum. Of **Linimentum Camphoræ**:—Linimentum Chloroformi, Linimentum Hydrargyri, Linimentum Terebinthinæ Aceticum.

Not Official.—Camphor Monobromata, Camphor Balls, Camphora cum Creta, Ceratum Camphoræ, Essentia Camphoræ, Spiritus Camphoræ Fortior, Essential Oil of Camphor, Camphor Leaf Oil, Oxycamphor, Phenol Camphor, Thymol Camphor, Resorcin Camphor, and Camphoric Acid.

Antidotes.—Stomach-pump or emetics, stimulants freely, and warmth to the extremities.

Foreign Pharmacopœias.—Official in all.

Description.—In solid, colourless, transparent, crystalline pieces of tough consistence; also in rectangular tablets or in pulverulent masses known as 'Flowers of Camphor.' Sp. gr. about .995. It has a powerful, penetrating odour, and a pungent, somewhat bitter taste, followed by a sensation of cold. It burns readily with a bright smoky flame, volatilises even at ordinary temperatures, and sublimes without residue when heated. It forms a liquid when triturated with Chloral Hydrate, Menthol, Phenol, or Thymol.

Its sp. gr. varies from .986 to .996. It evaporates entirely if left exposed to the air. 1 oz. of Powdered Camphor exposed to the air at a temperature of 70° F. (21.1° C.) lost about 37 grains per twenty-four hours. It melts at 347° F. (175° C.), boils at 401° F. (205° C.), and in closed vessels sublimes unchanged.

The Borneo Camphor from the *Dryobalanops aromatica*, though virtually the same as the Official, is valued very much more by the Chinese. Its formula contains H₂ more than ordinary Camphor (C₁₀H₁₆O), into which it may be converted by oxidising agents.

Preparations.

AQUA CAMPHORÆ. CAMPHOR WATER. (MODIFIED.)

Dissolve 70 grains of Camphor in a sufficient quantity of Alcohol (90 p.c.) to form half an ounce of the solution; add this in successive portions to 1 gallon of Distilled Water, shaking after each addition; finally agitate occasionally until all the Camphor is dissolved.

= (1 in 1000).

The Camphor is now dissolved in Alcohol (90 p.c.).

Dose.—Not given in B.P.; 1 to 2 oz. = $\frac{1}{16}$ to $\frac{1}{8}$ grain of Camphor.

Foreign Pharmacopœias.—Official in Dan., Mistura Camphorata, contains Camphor, Mucilage of Acacia, Syr. Cerasi, and Elderflower Water; Norw., Emulsio Camphoræ; Fr., Eau Camphrée; Port., same as Brit.; Span., Camphor, Elder, Honey, and Melissa Water; U.S., Camphor triturated with Alcohol, Precipitated Calcium Phosphate and Distilled Water; not in the others.

LINIMENTUM CAMPHORÆ. LINIMENT OF CAMPHOR. B.P. Syn.—

CAMPHORATED OIL. (MODIFIED.)

Camphor, in flowers, 1; Olive Oil, 4: dissolve the Camphor in the Olive Oil. = (about 1 in 5).

Camphor in flowers is now specified in place of Camphor.

Process for the determination of the Camphor.—*Analyst* '98, 281; *C.D.* '98, ii. 826.

Foreign Pharmacopœias.—Official in Austr. (*Oleum Camphoratum*), 1 and 3; Dan., Norw. and Swed., 1 and 4; Belg., Fr., Ger., Ital., Russ. and Swiss, 1 and 8; Span. (*Aceite Alcanforado*), 1 and 8; all with Olive Oil; Port., 1 and Almond Oil 9; Mex. (*Aceite Alcanforada*), 1 and 9; Hung., 1 and 2; both with Sesame Oil; U.S., 1 and Cotton-seed Oil 4; all by weight; not in Dutch or Jap.

LINIMENTUM CAMPHORÆ AMMONIATUM. AMMONIATED LINIMENT OF CAMPHOR. *B.P.Syn.*—COMPOUND LINIMENT OF CAMPHOR. *N.O.Syn.*—**LINIMENTUM AMMONIATUM CAMPHORATUM.** (MODIFIED.)

Camphor, $2\frac{1}{2}$; Oil of Lavender, $\frac{1}{8}$; Strong Solution of Ammonia, 5; Alcohol (90 p.c.), a sufficient quantity. Dissolve the Camphor and Oil of Lavender in 12 of the Alcohol; add the Strong Solution of Ammonia gradually, shaking them together until, after adding sufficient of the Alcohol to produce 20 of the Liniment, a clear solution is formed.

=(1 in 8).

Name altered and Alcohol (90 p.c.) used in place of Rectified Spirit.

Stimulating. Most useful in tic-douloureux and chronic rheumatism. Painful neuralgia has been relieved by applying lint previously soaked in the liniment, covering with a dry napkin until redness is produced, then lightly rubbing the part with the Solution of Bimeconate of Morphine (Squire).

Foreign Pharmacopœias.—Official in:

- Belg. Liquid Ammonia, 1; Camphorated Oil, 9.
 - Dan. Solution of Ammonia, 5; Camphor, 1; Rape Oil, 14.
 - Fr. Solution of Ammonia, 1; Camphorated Oil, 9.
 - Ger. Solution of Ammonia, 1; Camphorated Oil, 3; Poppy Oil, 1.
 - Mex., Solution of Ammonia, 1; Camphorated Oil, 9.
 - Norw. Solution of Ammonia, 2; Camphorated Oil, 1; Rape Oil, 2.
 - Port. Liquid Ammonia, 1; Camphorated Oil, 4.
 - Russ. Solution of Ammonia, 1; Camphorated Oil, 3; Sesame Oil, 1.
 - Swed. and Swiss, Solution of Ammonia, 1; Camphorated Oil, 3.
- All by weight; not in the others.

SPIRITUS CAMPHORÆ. SPIRIT OF CAMPHOR. *N.O.Syn.*—**TINCTURA CAMPHORÆ.** (MODIFIED.)

Camphor, 1; Alcohol (90 p.c.), a sufficient quantity. To the Camphor add enough of the Alcohol to form 10 of the Spirit of Camphor.

=(1 in 10).

Now made with Alcohol (90 p.c.) in place of Rectified Spirit.

Dose.—5 to 20 minims.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr. (*Teinture de Camphrè Conc.*), Ger., Ital., Jap., Norw., Port., Swed., Swiss and U.S., 1 in 10; Hung., about 1 in 7; Russ., 1 in 13; Mex. (*Alcohol Alcanforada*), 1 and 19; Span., 1 and 23; all by weight except U.S.

TINCTURA CAMPHORÆ COMPOSITA. COMPOUND TINCTURE OF CAMPHOR. *B.P.Syn.*—**PAREGORIC.** PAREGORIC ELIXIR. (MODIFIED.)

Tincture of Opium, 585 minims; Benzoic Acid, 40 grains; Camphor, 30 grains; Oil of Anise, $\frac{1}{2}$ fl. drm.; Alcohol (60 p.c.), a sufficient quantity. Dissolve the Benzoic Acid, Camphor, and Oil of Anise in 18 fl. oz. of the Alcohol; add the Tincture of Opium and a sufficient quantity of the Alcohol to produce 20 fl. oz. of the Tincture; filter if necessary.

The 40 grains of Opium has been replaced by the corresponding quantity of Tincture of Opium, 585 minims, as previously suggested in the 'Companion.'

Dose.—30 to 60 minims.

This compound Tincture of Camphor contains in each fl. drm. a proportion of Tincture of Opium equivalent to $\frac{1}{30}$ grain of Morphine Hydrochloride, or to $\frac{1}{4}$ grain of Opium (containing 10 p.c. of Anhydrous Morphine); or to nearly .5 milligramme (.00046 gramme) of Anhydrous Morphine in each c.c.

The Pimpinella Oil is preferable as being more soluble in Alcohol (60 p.c.).

Foreign Pharmacopœias.—Official in:

Belg. **Elixirium Paregoricum.**—Opium, 5; Benzoic Acid, 5; Camphor, 3.5; Oil of Anise, 2.5; Alcohol (80 p.c.), 1000.

Dan. and Swed. **Tinctura Thebaïca Benzoïca.**—Opium, 5; Benzoic Acid, 5; Camphor, 3; Oil of Anise, 2; Diluted Alcohol, 1000.

Fr. **Elixir Paregorique.**—Extract of Opium, 3; Benzoic Acid, 2; Camphor, 2; Oil of Anise, 3; Alcohol (60 p.c.), 650.

Ger. and Russ. **Tinctura Opii Benzoïca.**—Opium, 1; Benzoic Acid, 4; Camphor, 2; Oil of Anise, 1; Diluted Alcohol, 192.

Jap. **Tinctura Opii Benzoïca.**—Opium, 1; Benzoic Acid, 4; Camphor, 2; Oil of Fennel, 1; Diluted Alcohol, 192.

Norw. **Tinctura Opii Benzoïca.**—Tincture of Opium, 50; Benzoic Acid, 5; Camphor, 3; Oil of Anise, 2; Diluted Alcohol, 940.

Mex. **Tinctura de Opio Alcanforado.**—Extract of Opium, 3; Benzoic Acid, 3; Camphor, 2; Oil of Anise, 3; Alcohol (60 p.c.), to 600.

Port. **Tinctura de Opio Composta**, and Swiss, **Tinctura Opii Benzoïca.**—Opium, 1; Benzoic Acid, 1; Camphor, 1; Oil of Anise, 1; Alcohol (65 p.c.), 196.

U.S. **Tinctura Opii Camphorata.**—Opium, 4; Benzoic Acid, 4; Camphor, 4; Oil of Anise, 4; Glycerin, 40; Diluted Alcohol to 1000.

All by weight, except U.S.

Not Official.

CAMPHOR BALL.—Camphor, 2; White Beeswax, 5; Spermaceti, 3; Oil of Almonds, 3; Tincture of Tolu, $\frac{1}{2}$: melt, and pour into half-ounce gallipots.

CAMPFORA CUM CRETA.—Camphor, 1; Prepared Chalk, 8: powder the Camphor by rubbing it with a few drops of Alcohol (90 p.c.), mix in the Chalk, and pass the whole through a sieve. A dentifrice.

CERATUM CAMPHORÆ.—Camphor, 2; White Beeswax, 3; Lard, 4; Oil of Almonds, 3: melt together and stir till cold.

ESSENTIA CAMPHORÆ.—Camphor, 1; Alcohol (90 p.c.), 20. Given for coryza, 5 minims every hour in water or on sugar.

SPIRITUS CAMPHORÆ FORTIOR (Rubini's Essence).—A saturated solution, in Alcohol (90 p.c.).

ESSENTIAL OIL OF CAMPHOR.—An oily liquid, varying in colour from pale to dark yellow. Sp. gr. different samples examined by us have varied from .840 to .980. Optical Rotation Dextrogyre. It has been used as an application in rheumatism.

Camphor Leaf Oil, investigated by David Hooper.—*P.J.* '96, i. 20.

OXYCAMPHOR.—Is the product of the oxidization of Camphor, and may be chemically regarded as that body with one of its Hydrogen atoms replaced by the Hydroxyl radicle. White crystalline powder. Soluble about 1 in 50 Water. Has been recommended in dyspnoea.—*P.J.* '96, ii. 378; '97, i. 254; *L.* '97, ii. 404.

Dose.—7 to 15 grains.

PHENOL-CAMPHOR, **THYMOL-CAMPHOR**, and **RESORCIN-CAMPHOR** are oily fluids obtained by heating Camphor with equal parts of Phenol, Thymol, and Resorcin respectively.—*P.J.* (3) '96, i. 325.

CAMPHORIC ACID.—Slightly soluble in Water, more readily in Alcohol (90 p.c.).

Is a valuable remedy in cases of urinary calculi and of vesical catarrh. A 1 p.c. solution has been recommended in acute and chronic affections of the respiratory passages.—*P.J.* (3) xix. 507.

One gramme given 3 or 4 times a day, or 2 grammes in the evening, checks the night sweating in phthisis.—*L.M.R.* '88, 276.

Not Official.

CAMPHORA MONOBROMATA.

MONOBROMATED CAMPHOR.

$C_{10}H_{15}BrO$, eq. 229.33.

Colourless prismatic needles or scales, with a camphoraceous odour and taste.

Solubility.—Almost insoluble in Water; soluble 1 in 12 of Alcohol (90 p.c.); 10 in 7 of Chloroform; 1 in 2 of Ether; 1 in 8 of Olive Oil; sparingly in Glycerin.

Medicinal Properties.—Hypnotic and sedative. Given in hysteria, epilepsy, chorea, spermatorrhœa, and delirium tremens; but its use requires caution. It has been stated to be an antidote to Strychnine.

Dose.—2 to 5 grains.

Prescribing Notes.—It can be prescribed in pills with a mixture of Glucose and Treacle (equal parts), or can be dissolved in Almond or Olive Oil and emulsified with Mucilage and Water. It is also given with Extract of Belladonna.

Larger doses than 5 grains are sometimes given in delirium tremens.

Foreign Pharmacopœias.—Dutch, Fr., Ital., Jap., Mex. (Alcanfor Monobromado), Port., Span., Swiss and U.S.; not in the others.

Tests.—It melts at 169° F. (76° C.). When boiled with test-solution of Silver Nitrate, it is decomposed and yields Silver Bromide. It is soluble without decomposition in cold concentrated Sulphuric Acid, and will again separate unaltered if the solution be poured into Water.

CANNABIS INDICA.

INDIAN HEMP.

The dried flowering or fruiting tops of the female plant of *Cannabis sativa*, grown in India, from which the resin has not been removed.

O'Shaughnessy introduced Indian Hemp into this country, and Peter Squire made an extract of it for him.

Recent literature.—*P.J.* (3) xxv. 246; *J.C.S. Trans.* '96, 538; *L.* '97, i. 238.

Medicinal Properties.—Sedative, anodyne, hypnotic, and anti-spasmodic. Has been used with success in migraine and delirium, neuralgia, and pain of last stages of phthisis, and in acute mania; also in menorrhagia and dysmenorrhœa. It is combined with Belladonna in whooping cough, and in infantile convulsions, hepatic and renal colic; in tetanus and hydrophobia.

It does not produce constipation or loss of appetite; on the contrary, it restores the appetite which has been lost by chronic Opium and Chloral drinking.—*L.* '89, i. 625.

Prescribing Notes.—Usually prescribed in the form of Extract or Tincture.

Dose of the Extract $\frac{1}{4}$ to 1 grain (with a sufficiency of Liquorice powder to form a pill); but as it varies considerably in strength it is better to commence with the smaller dose; toxic symptoms have been produced with 1 grain. Dose of the Tincture 5 to 15 minims, which can be taken on Sugar or diffused in Water by the aid of 1 fl. drm. of Mucilage of Acacia to each fl. oz. of Water; the Mucilage should be diluted with twice its volume of Water before the addition of the Tincture.

Official Preparations.—*Extractum Cannabis Indicæ.* Of the **Extract**, *Tinctura Cannabis Indicæ.* The **Tincture** is contained in *Tinctura Chloroformi et Morphine Composita.*

Not Official.—*Cannabinæ Tannas*, and *Cannabinon.*

Antidotes.—In case of over-dose, after employing stomach-tube or emetics hot brandy-and-water may be given, vegetable acids, such as lemon juice, vinegar, and the like. Strychnine should be injected and a blister applied to the nape of the neck.

Foreign Pharmacopœias.—Official in Austr., Belg., Dutch, Fr. (*Chanvre*), Hung., Jap., Norw. (*Fructus Cannabis*), Dan., Port. (*Canhamo*), Russ., Mex. and Span. (*Canamo*), Swed., Swiss and U.S.; not in Ger. or Ital.

Description.—In compressed, rough, dusky-green masses, consisting of the branched upper part of the stem, bearing leaves and pistillate flowers or fruits, matted together by a resinous secretion. The upper leaves of the plant are simple, alternate, 1—3-partite; the lower are opposite and digitate, and consist of five to seven linear-lanceolate leaflets, with distantly serrate margins. The fruit is one-seeded, and supported by an ovate-lanceolate bract. Both leaves and bracts bear external oleo-resin glands and one-celled curved hairs, the bases of which are enlarged, and contain cystoliths.

Preparations.

EXTRACTUM CANNABIS INDICÆ. EXTRACT OF INDIAN HEMP. (MODIFIED.)

Exhaust Indian Hemp, in coarse powder, with Alcohol (90 p.c.) by percolation; evaporate the percolate to the consistence of a soft extract.

Now made by percolation and Alcohol (90 p.c.) instead of maceration in Rectified Spirit.

By prolonged heating even on a water-bath, the extract becomes brown, insoluble in Alcohol (90 p.c.) and soluble in Water.

6 of Indian Hemp yield about 1 of Alcoholic Extract.

Dose.— $\frac{1}{4}$ to 1 grain.

Foreign Pharmacopœias.—Official in Austr., Belg., Dutch, Fr., Hung., Jap., Mex. (*Extracto de Marihuana*), Norw., Port., Russ., Swed., Swiss and U.S.; not in the others.

TINCTURA CANNABIS INDICÆ. TINCTURE OF INDIAN HEMP.

Extract of Indian Hemp, 1; Alcohol (90 p.c.) a sufficient quantity. Dissolve the Extract of Indian Hemp in 18 of the Alcohol; filter if necessary; add sufficient of the Alcohol to produce 20 of the Tincture. = (1 in 20).

Now made with Alcohol (90 p.c.) instead of Rectified Spirit.

22 minims contain 1 grain of Extract.

Dose.—5 to 15 minims.

Foreign Pharmacopœias.—Official in Belg., Ger. and Port., 1 Extract in 20; the following are from Herb: Fr., Hung., Jap., Mex. and Swiss, 1 in 5; Russ., 1 in 10; all by weight; U.S., 15 in 100; not in the others.

Not Official.

CANNABINE TANNAS.—An amorphous yellowish powder, sparingly soluble in Water, Alcohol, and Ether. Soluble in acidulated Alcohol.

Dose.—4 to 8 grains, mixed with Sugar and taken as a powder or in a *cachet*.

Was introduced as a hypnotic, but its effects are very uncertain.—*T.G.* '85, 329, 379. It is occasionally prescribed for menorrhagia.

CANNABINON.—A soft resinous substance, generally found as a 10 p. c. trituration with Milk Sugar, also introduced as a hypnotic, but the dose ($1\frac{1}{2}$ grains) was followed by excitement, collapse, and cramps.—*T.G.* '85, 286; *L.M.R.* '86, 434.; contra-indicated in cardiac disease, *L.* '87, i. 542.

CANTHARIS.

CANTHARIDES.

The dried beetle, *Cantharis vesicatoria*.

It is collected in Spain, France, Russia, Sicily, and Hungary.

The powder should be dry and kept closely corked, for if at all damp it is apt to acquire a putrid odour. A piece of Camphor kept in it prevents mites.

Medicinal Properties.—Externally its effects are rubefacient and irritant; by continued application it is vesicant. For the latter purpose the Emplastrum or Liquor Epispasticus is used, and is especially effective in inflammation of deep-seated parts, as in pleuritis, pericarditis, pneumonia, sciatica, neuralgia, and over the præcordial region in acute rheumatism; applied to rheumatic joints it removes pain and swelling; applied over the epigastrium it often checks obstinate vomiting and gastric pain. It acts for a longer period, and is less irritating to the patient, than Ammoniacal or Acetic Acid embrocations. Internally in small doses it is diuretic and aphrodisiac. It is given in gleet, in impotence, and incontinence of urine due to paralysis, but it should be given cautiously, for it irritates the kidneys and sometimes produces strangury, and it should never be given to aged people or children, or in cases of nephritis.

The tincture in 5 minim doses three times daily in Water, arrests hæmorrhage from the kidney.—*B.M.J.* '98, ii. 1551.

It is the basis of most of the applications used to increase the growth of hair.

In chronic inflammation of the bladder it should *not* be used as a counter-irritant, on account of its irritating effects on the urinary organs, when absorbed. In such cases a solution of Silver Nitrate ($\frac{1}{2}$ drm. to 1 fl. oz. of water) is to be preferred.

Thirty-two cases out of fifty-six of cystitis cured by teaspoonful doses of the following solution: Cantharidin, 1 milligramme, dissolved in 1 gramme of Alcohol, and diluted to 100 grammes with Water.—*B.M.J.E.* '95, ii. 6.

Official Preparations.—Acetum Cantharidis, Emplastrum Calefaciens, Emplastrum Cantharidis, Liquor Epispasticus, Tinctura Cantharidis, and Unguentum Cantharidis. Collodium Vesicans is prepared from Liquor Epispasticus.

Not Official.—Cantharidin, Linimentum Crinale, Liquor Cantharidis Concentratus, Unguentum Stimulans, and Boni's Blister.

Antidotes.—In case of poisoning by Cantharides use Emetics or stomach pump, followed by milk, raw eggs, and stimulants; inject Morphine for pain.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex., Norw., Port., Russ., Span., Swed., Swiss and U.S.

Description.—From about three-quarters of an inch to an inch (eighteen to twenty-five millimetres) long, and a quarter of an inch (six millimetres) broad, with two long elytra or wing-sheaths of a shining green or coppery-green colour, under which are two thin brownish transparent membranous wings; odour strong and disagreeable.

Five samples exhausted by us with Chloroform, evaporated and treated with Carbon Bisulphide to remove Oil, yielded .38, .48, .58, .60, and .62 p.c. of well crystallised Cantharidin.

The pharmacy of Cantharides, with a method for the determination of total Cantharidin, both free and combined, and the following strengths suggested: Acetum Cantharidis, 1 in 2000; Emplastrum Calefaciens, 1 in 5000; Emplastrum Cantharidis, 1 in 1,000; Liquor Epispasticus, 1 in 300; Tinctura Cantharidis, 1 in 10000; Unguentum Cantharidis, 1 in 3000. The typical sample of drug selected yielded .68 p.c. of total Cantharidin, .5075 p.c. being free, and .1725 p.c. combined. The free Cantharidin is extracted with Chloroform; but in the determination of total Cantharidin the flies in number 40 powder, previous to being exhausted with Chloroform, are treated with a mixture of Glacial Acetic Acid 1 vol., Rectified Spirit, 2 vol., and Chloroform 3 vol. The process of purification is too long to insert here.—*P.J.* '98, i. 258. *C.D.* '98, i. 421.

Preparations.

ACETUM CANTHARIDIS. VINEGAR OF CANTHARIDES. (ALTERED.)

Cantharides, bruised, 2; Glacial Acetic Acid and Distilled Water, mixed in equal volumes a sufficient quantity. Macerate the Cantharides in 18 of the mixture of Glacial Acetic Acid and Distilled Water for twenty-four hours; transfer to a percolator; when the liquid ceases to pass, pour sufficient of the menstruum in successive portions over the contents of the percolator to produce 20 of the Vinegar of Cantharides. = (1 in 10).

The menstruum is rather stronger in Acetic Acid and the process is modified.

Foreign Pharmacopœias.—Official in Port., about 1 in 6: not in the others.

COLLODIUM VESICANS. BLISTERING COLLODION. (ALTERED.)

Blistering Liquid, 20; Pyroxylin, $\frac{1}{2}$: add the Pyroxylin to the Blistering Liquid in a stoppered bottle; shake them together until the Pyroxylin is dissolved.

The quantity of Pyroxylin has been reduced to one-half.

See also CANTHARIDIN, p. 184.

Foreign Pharmacopœias.—Official in Belg., Dan., Ger., Jap. (Collodium Epispasticum), Mex. (Collodión Cantaridado), Norw., Port., Russ., Swiss and U.S.: not in the others.

EMPLASTRUM CALEFACIENS. *B.P.Syn.*—WARMING PLASTER. (ALTERED.)

Cantharides, in coarse powder, 1; Yellow Beeswax, 1; Resin, 1; Resin Plaster, 13; Soap Plaster, 8; Distilled Water, boiling, 5. Infuse the Cantharides in the Distilled Water for six hours; squeeze strongly through Calico; evaporate the expressed liquid on a water-

bath till reduced to one-third; add the other ingredients; melt on a water-bath; stir until the ingredients are thoroughly mixed.

=(about 1 in 25).

Expressed Oil of Nutmeg is now omitted.

Foreign Pharmacopœias.—Official in U.S., *Emplastrum Picis Cantharidatum*, 1 in 40; not in the others.

EMPLASTRUM CANTHARIDIS. CANTHARIDES PLASTER. (MODIFIED.)

Cantharides, in powder, 7; Yellow Beeswax, 4; Lard, 4; Resin, 4; Soap Plaster, 1. Melt the Resin; add the Soap Plaster, and, afterwards, the Yellow Beeswax and Lard. Sprinkle the Cantharides into the melted mixture; stir continuously while the product is cooling.

=(nearly 1 in 3).

The strength remains about the same, but Soap Plaster has been introduced in the place of Suet, and the proportion of other ingredients has been altered.

B.P. directs the Resin to be melted separately, but there is no advantage in this.

Foreign Pharmacopœias.—Official in Austr., Fr. and Mex., 1 in 3; Belg., Dutch, Hung., Ital., Norw., Span. and Swed., about 1 in 3; Dan., Ger., Port., Russ. and Swiss, about 1 in 4; not in U.S.

Emplastrum Cantharidum Perpetuum, Austr., Norw. and Swed., 1 in 7½; Swiss, 3 in 10; Dan., *Emp. Canth. cum Euphorbio* 1 in 6¾; Hung., 1 in 5½; Belg., 1 in 8; Ger. and Russ., 1 in 10; not in the others.

LIQUOR EPISPASTICUS. BLISTERING LIQUID. (ALTERED.)

Mix 10 of Cantharides in No. 20 powder, with 5 of Acetic Ether; pack in a percolator; at the expiration of twenty-four hours pour Acetic Ether over the contents of the percolator; allow the solution to pass slowly through until 20 of the Liquid is obtained.

=(1 in 2).

It is now twice the strength of the Blistering Liquid of B.P. '85.

See also CANTHARIDIN, p. 184.

(Not in the other Pharmacopœias.)

TINCTURA CANTHARIDIS. TINCTURE OF CANTHARIDES. (MODIFIED.)

Cantharides, in No. 40 powder, 1; Alcohol (90 p.c.), 80; prepare by the maceration process.

=(1 in 80).

Now made with Alcohol (90 p.c.) in place of Proof Spirit.

Dose.—5 to 15 minims; if frequently repeated 2 to 5 minims.

Foreign Pharmacopœias.—Official in Swed., 1 and 30; U.S., 1 in 20; Austr., Dan., Ger., Dutch, Ital., Jap., Port., Russ. and Swiss, 1 in 10; Mex., 1 and 10; Fr., 1 and 10, also with Acetic Ether 1 and 10; Span., 1 and 12½; Belg. and Hung., 1 and 5; all by weight, except U.S.

UNGUENTUM CANTHARIDIS. CANTHARIDES OINTMENT. (ALTERED.)

Cantharides, bruised, 1; Benzoated Lard, 10. Melt the Benzoated Lard, add the Cantharides, and digest at a temperature of about 120° F. (48.9° C.) for twelve hours. Strain through calico and press the residue gently; stir until cold.

=(about 1 in 10).

Now 1 to 10 of Benzoated Lard, in place of 1 to 7 of a mixture of Olive Oil and Yellow Beeswax.

Employed to promote discharge from a blistered surface.

Foreign Pharmacopœias.—Official in Belg., 1 in 11; Fr., *Pommade Epispas-*

tique Verte, 1 in 33, and P. E. Jaune, 1 in 17; Port., about 1 in 23; Ital., Pomata di Cantaridi, 1 in 10; Swiss, 1 in 7; Ger. and Russ., about 1 in 5; Norw. and Swed., 1 in 5; Dan., Ung. Canth. Viride, about 1 in 3; Span., 3 in 10; U.S., Ceratum Cantharidis, 32 in 100; Jap., Unguentum Vesicans Fort., 1 in 20, also Mitius, 1 in 40; Mex. Unguento de Cantaridas, about 1 in 18; not in Austr., Dutch or Hung.

Not Official.

CANTHARIDIN, $C_{10}H_{12}O_4$.—Obtained from Cantharides. White crystalline scales. Melts at $200^{\circ}C$.

Solubility.—1 in 1150 of Rectified Spirit; 1 in 700 of Rectified Ether, sp. gr. .720; 1 in 55 of Chloroform; 1 in 150 of Acetic Ether, but even when dissolved at $60^{\circ}F$. part separates on standing; 1 in 200 of Almond Oil; 1 in 65 of Oil of Cloves.

Acetone is the best solvent for Cantharidin, which it dissolves 1 in 40, and as it is cheaper it possesses a double advantage over Acetic Ether. It makes a good Liquor Epispasticus, dissolves Pyroxylin, and is therefore also suitable for Colloidum Vesicans.

Foreign Pharmacopœias.—Official in Belg., Dutch, Fr., Mex., Port. and Span.; not in the others.

LINIMENTUM CRINALE.—Cantharidin, 1 grain; Acetic Ether, 6 fl. drm.; dissolve and add Alcohol (90 p.c.), 3 fl. oz.; Castor Oil, 1 fl. oz.; Oil of Lavender, 15 minims.

This Liniment is highly recommended for application to the head where the hair is falling off; but after applying it a few times the head should be washed, or it may accumulate and cause too much irritation. It may be diluted with equal parts (or more) of Alcohol (90 p.c.) for delicate skins.

LIQUOR CANTHARIDIS CONCENTRATUS.—One fluid ounce = 1 ounce of Cantharides. It is obtained by re-percolation with Acetic Ether, and is standardised to contain .5 p.c. of Cantharidin. This Liquor forms a convenient substitute for Cantharides in making the various preparations; it effects a great saving of time and produces a better result.

Acetone is better as a solvent, but cannot be employed for Official preparations.

UNGUENTUM STIMULANS.—(Erasmus Wilson's.) Cantharides in Powder, 3; Lard, 12; macerate with a moderate heat for twenty-four hours and filter through paper.

In place of the Cantharides, 6 of Liquor Epispasticus or 3 of Liquor Cantharidis Concentratus may be employed, evaporated to a thin extract, and mixed with the melted Lard.

BONI'S BLISTER.—Camphor, 20; Chloral Hydrate, 30; melt and add Powdered Cantharides, 10; digest for an hour at $150^{\circ}F$.; filter.—*L.M.R.* '89, 19.

CAOUTCHOUC.

INDIA-RUBBER.

[NEW.]

The prepared milk-juice of *Hevea brasiliensis*, and probably other species; known in commerce as pure Para rubber.

Official Preparation.—Liquor Caoutchouc. The **Liquor** is used in the preparation of Charta Sinapis.

Foreign Pharmacopœias.—Fr., Mex., and Span., Goma Elástica; U.S., Elastica; not in the others.

Description.—In elastic masses of varying thickness, brownish-black externally, and mottled with a pale tint internally; insoluble in Water, Ethylic Alcohol, alkaline solutions, or dilute acids; soluble in Chloroform, Oil of Turpentine, Carbon Bisulphide, Benzol, and Petroleum Spirit. When heated to about 257° F. (125° C.) it melts, remaining soft and adhesive after cooling. Odour characteristic, somewhat empyreumatic; nearly tasteless.

Preparation.

LIQUOR CAOUTCHOUC. SOLUTION OF INDIA-RUBBER. (New.)

India-rubber, 1; Benzol, 10; Carbon Bisulphide, 10. Cut the India-rubber into fine shreds, and place it in a well-stoppered bottle containing the previously mixed Benzol and Carbon Bisulphide. Set aside in a cool place, and agitate occasionally until solution is effected.

CAPSICI FRUCTUS.

CAPSICUM.

The dried ripe fruit of *Capsicum minimum*.

Imported from Zanzibar, and distinguished in commerce as Guinea Pepper, Chillies or Bird Pepper. That from Nepal has the finest flavour. These in powder are sold as Cayenne Pepper.

It yields its virtues to Water, Alcohol, Ether, Acetic Ether, and the fixed and volatile Oils.

Medicinal Properties.—Stimulant, stomachic, and tonic, used chiefly as a condiment. Given in dyspepsia and dipsomania, flatulent distension of hysteria, chronic cystitis, gleet and spermatorrhœa; to induce sleep and promote appetite in delirium tremens. Used externally as a rubefacient in rheumatism and lumbago and for chilblains.

Dose.—Not given in B.P.; $\frac{1}{2}$ to 1 grain in pill.

Official Preparations.—Tinctura Capsici, and Unguentum Capsici. The Tincture is contained in Tinctura Chloroformi et Morphine Composita.

Not Official.—Tinctura Capsici Fortior, Oleo-resina Capsici, Emplastrum Capsici, and Unguentum Oleo-resine Capsici.

Foreign Pharmacopœias.—Official in Belg., Dan., Fr. (Poivre de Guinée), Ger., Mex. (Chile), Port. (Pimentao), Russ., Span. (Pimiento), Swed., Swiss and U.S.; not in the others.

Description.—Dull orange-red, oblong-conical, obtuse, two-celled fruits, from about one-half to three-quarters of an inch (twelve to twenty millimetres) in length and a quarter of an inch (six millimetres) in diameter; sometimes attached to a five-toothed inferior calyx, and a long, straight, slender peduncle. The pericarp is somewhat shrivelled, glabrous, translucent and leathery, and contains from ten to twenty small flat seeds, either loose or attached to a thin reddish dissepiment. Odour characteristic; taste intensely pungent.

Test.—On incineration Capsicum should not yield more than 6 p.c. of Ash.

The ash was determined from three samples of Fruits, also three samples of Pulvis Capsici: Fruits yielded, 3.75, 4.52, 5.38 p.c.; Pulvis, 4.44, 4.49, 6.31 p.c. Good Capsicum fruits yield about 20 p.c. of Oleo-resin.—*P.J.* '96, ii. 546.

Preparations.

TINCTURA CAPSICI. TINCTURE OF CAPSICUM. (ALTERED.)

Capsicum, in No. 20 powder, 1; Alcohol (70 p.c.) 20; prepare by the maceration process. = (1 in 20).

Now 1 in 20 instead of $\frac{1}{2}$ in 20, and Alcohol (70 p.c.) in place of Rectified Spirit. It is made by maceration as suggested in *Companion*; but can also be conveniently prepared in small quantities by dilution of the Strong Tincture.

Dose.—5 to 15 minims.

Foreign Pharmacopœias.—Official in Belg., 1 and 5; Mex., 1 in 5; Dan., Ger., Russ. and Swiss, 1 in 10: all by weight. U.S., 1 in 20; not in the others.

UNGUENTUM CAPSICI. CAPSICUM OINTMENT. (NEW.)

Capsicum Fruit, bruised, 120 grains; Spermaceti, 60 grains; Olive Oil (by weight), 1 oz.; digest on a water-bath for one hour, occasionally stirring; strain; set aside to cool, without stirring.

Not Official.

TINCTURA CAPSICI FORTIOR (Turnbull's Tincture).—Capsicum in No. 40 powder, 10; percolated with sufficient Alcohol (90 p.c.) to produce 30.

This has been added to B.P.C. formulary. Previously known as *Linimentum Capsici*.

Used externally for swollen chilblains as a counter-irritant, but *not* when the skin is *broken*. For *chilblains*, saturate a piece of sponge or flannel with the tincture, and rub the chilblain well until a strong tingling is produced; continue daily until recovery. A small dossil of lint or cotton, dipped into the tincture, is an excellent remedy for toothache.

Used by aurists to paint behind the ears as a counter-irritant, but a solution of Volatile Oil of Mustard is better.

OLEO-RESINA CAPSICI (U.S.)—*Syn.*—CAPSICIN.—Obtained by percolating Capsicum with Ether, distilling off the Ether, and straining out the fatty matter which separates. It is a thick liquid of a yellowish red colour, which becomes very fluid when gently heated, and at a high temperature volatilises. $\frac{1}{2}$ a grain only, thus volatilised in a large room, will cause all who respire the air of the room to cough and sneeze. It is soluble in Alcohol, Ether, and Oil of Turpentine.

The active principle of Capsicum has been obtained by Thresh in well defined pearly white crystals, to which he has given the name *Capsaicin*.—*P.J.* (3) vii. 21.

EMPLASTRUM CAPSICI (U.S.)—Spread an even layer of Resin Plaster on muslin, and allow it to cool; then apply a thin coating of Oleo-resin of Capsicum, by means of a brush, leaving a narrow blank margin along the edges.

Each square inch should contain 1 grain of Oleo-resin of Capsicum.

UNGUENTUM OLEO-RESINÆ CAPSICI (B.P.C.)—Oleo-resin of Capsicum, 2; Yellow Wax, 1; Benzoated Lard, 8. Melt the Wax and Lard at a low temperature, add the Oleo-resin, mix, and strain if necessary. Stir till cold.

Not Official.

CARBO ANIMALIS.

ANIMAL CHARCOAL. BONE BLACK.

This substance and the purified Animal Charcoal are now deleted from B.P. They are used in Pharmacy chiefly as decolourising agents.

CARBO LIGNI.

WOOD CHARCOAL.

The carbonaceous residue of wood charred by exposure to a red heat without access of air.

Oak, Beech, Hazel, Willow, and Poplar are employed.

Medicinal Properties.—Antiseptic, absorbent and deodoriser. Given in powder or in cachets in cases of distension by intestinal gas, and in foul eructations and diarrhoea in dysentery and typhoid; also in dyspepsia attended with flatus, acidity and pain. Externally, as a poultice, it cleanses and absorbs the fetor of ulcers and gangrenous parts.

Dose.—60 to 120 grains.

Prescribing Notes.—It has been given in powder diffused in Water, also in the form of **capsules, cachets, and biscuits**. The most palatable way is to mix it with **chocolate**.

Foreign Pharmacopœias.—Official in all except Dan., Jap., or Norw.; Fr., Charbon Végétal; Mex., Carbón Vegetal.

Description.—A black powder without taste or odour, free from gritty matter.

Test.—When burned at a high temperature, with free access of air, it should not leave more than $7\frac{1}{2}$ p.c. of ash.

6 Samples examined, showed 2 to 7 p.c. of ash.—*P.J.* (3) xx. 946.

CARBONIS BISULPHIDUM.

CARBON BISULPHIDE.

B.P. Syn.—CARBON DISULPHIDE.

[NEW.]

CS_2 , eq. 75.55.

It may be prepared by the combination of Carbon and Sulphur at a high temperature, the product being subsequently condensed and purified.

Solubility.—About 1 in 500 of Water, readily soluble in Absolute Alcohol, Ether (sp. gr. .720), Chloroform, and the fixed and volatile Oils.

It is a good solvent for Iodine, Phosphorus, Precipitated Sulphur, etc.

Medicinal Properties.—It is not often employed in medicine. Turnbull used it as an application to enlarged lymphatic glands; also the **vapour** to the ear in deafness, applied on a sponge or absorbent wool in a wide-mouthed bottle.

Two ounces of a saturated Solution in Water, mixed with Milk or Syrup, have been given in typhoid fever.—*L.* '89, i. 596.

One or two ounces daily of a saturated Solution in Peppermint Water have been given as a substitute for Bergeon's treatment of phthisis.—*B.M.J.* '88, i. 421.

Official Preparations.—Used in the preparation of Liquor Caoutchouc and Pilula Phosphori.

Foreign Pharmacopœias.—Official in Belg., Fr., Ital., Pert., Span. and U.S.; not in the others.

Description.—A clear, colourless, highly refractive liquid, having a characteristic but not fetid odour.

Tests.—Sp. gr. 1.268—1.269. Boiling point 114.8°—116.6° F. (46°—47° C.). It evaporates rapidly at ordinary temperatures, and is highly inflammable, burning with a blue flame and producing Carbonic and Sulphurous Anhydrides. It should not affect the colour of Blue Litmus-paper moistened with Water. Evaporated spontaneously in a glass vessel, it should leave no residue (absence of Sulphur). Shaken with Solution of Lead Acetate, the latter should not be blackened (absence of Hydrogen Sulphide).

CARDAMOMI SEMINA.

CARDAMOM SEEDS.

The dried ripe seeds of *Elettaria Cardamomum*. The seeds should be kept in their pericarps, and separated when required for use.

1 of fruit yields about $\frac{2}{3}$ of seeds.

Medicinal Properties.—Stomachic, carminative, stimulant; a useful adjuvant to purgatives to prevent griping.

Official Preparation.—Tinctura Cardamomi Composita. Contained in Extractum Colocynthis Compositum, Pulvis Cinnamomi Compositus, Pulvis Crete Aromaticus, Tinctura Gentianæ Composita, Tinctura Rhei Composita. Of the **Tincture** contained in Decoctum Aloes Compositum, and Mistura Sennæ Composita.

Not Official.—Oleum Cardamomi, Tinctura Cardamomi, and Tinctura Carminativa.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Jap., Mex. (Cardamomo menor), Norw., Port., Russ., Span., Swed., Swiss and U.S.; not in Ital.

Description.—The fruits usually vary from two-fifths to four-fifths of an inch (one to two centimetres) in length; they are ovoid or oblong in shape, bluntly triangular in section, and shortly beaked at the apex, pale buff in colour, and longitudinally striated. The seeds are dark reddish-brown in colour, about one-eighth of an inch (three millimetres) in length, and the same in breadth and thickness, irregularly angular, transversely wrinkled, and enclosed in a thin, colourless, membranous aril. Odour and taste agreeably warm and aromatic.

Test.—Incinerated they should not yield more than 4 p.c. of ash.

The ash of Pericarps, Seeds, and Pulvis Cardamomi was determined: Pericarps (three samples) yielded 10.4, 12.0, 13.4 p. c.; Seeds (three samples), 2.38, 2.81, 3.85 p. c.; Pulvis (three samples), 7.56, 6.33, 9.93 p. c.; these results seem to indicate that the Pulvis Cardamomi was not obtained from the seeds only, as directed in the Pharmacopœia. Even whole fruits had but an average of 5.5 p.c.

Preparation.

TINCTURA CARDAMOMI COMPOSITA. COMPOUND TINCTURE OF CARDAMOMS. (MODIFIED.)

Cardamom seeds, bruised, 1 oz.; Caraway fruit, bruised, 1 oz.; Raisins of Commerce, freed from seeds, 8 oz.; Cinnamon Bark, bruised,

2 oz.; Cochineal, in powder, 220 grains; Alcohol (60 p.c.), 80 fl. oz.; prepare by the maceration process. = (1 in 80).

Now made with Alcohol (60 p.c.) in place of Proof Spirit.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Official in U.S., 1 in 50, contains Glycerin, and is made with the fruit of the Cardamoms; not in the others.

Not Official.

OLEUM CARDAMOMI—A pale aromatic Oil distilled from Cardamom Seeds, which contain about 4 p.c. Sp. gr. '900—'940.

TINCTURA CARDAMOMI.—Cardamom Seeds, bruised, 1; sufficient Alcohol (60 p.c.), to percolate 10.

Dose.—30 to 60 minims.

Foreign Pharmacopœias.—Official in Port. and Swiss, 1 in 5 by weight; U.S., 1 in 10; not in the others.

TINCTURA CARMINATIVA (B.P.C.).—Cardamom Seeds, bruised, 600 grains; Stronger Tincture of Ginger (*B.P.* '85), $1\frac{1}{2}$ fluid ounces; Oil of Cinnamon, 100 mins.; Oil of Caraway, 100 mins.; Oil of Cloves, 100 mins.; Rectified Spirit sufficient to produce 20 fl. oz.: macerate the Cardamoms in 15 fl. oz. of the Spirit for a week, decant, express, and dissolve the Oils in the mixed tinctures and add Rectified Spirit to make 20 fl. oz.

Dose.—2 to 10 minims. Introduced as a flavouring agent.

By replacing the 600 grains of Cardamom Seeds by 24 minims of Oil of Cardamoms the maceration is avoided.

CARUI FRUCTUS.

CARAWAY FRUIT.

The dried fruit of *Carum Carvi*.

Cultivated in England and Germany. The herb flowers in the second year, and the fruit ripens in July or August. Yields from 3 to 6 p.c. of Oil.

Medicinal Properties.—Aromatic, stomachic, and carminative. Used occasionally in flatulent colic, as an adjuvant to other medicines, and to prevent griping of purgatives.

Official Preparations.—Aqua Carui, and Oleum Carui. Contained in Confectio Piperis, Pulvis Opii Compositus, Tinctura Cardamomi Composita, Tinctura Sennæ Composita. The Oil is contained in Pilula Aloes Barbadosensis.

Foreign Pharmacopœias.—Official in Austr., Belg., Fr., Ger. (Kümmel), Mex. (Alcaravea), Port. (Alcaravie), Russ., Span. (Alcarabea), Swed., Swiss, and U.S.; not in the others.

Description.—Mericarps usually separate; each from about one-sixth to one-fourth of an inch (four to six millimetres) long, and about one-twenty-fifth of an inch (one millimetre) broad; brown in colour with paler primary ridges, slightly curved, tapering towards each end and glabrous. The transverse section of each mericarp exhibits six vittæ. Odour aromatic; taste aromatic and agreeable.

Test.—When incinerated the Fruit should not yield more than 8 p.c. of ash.

The ash was determined from three samples of Seeds and three samples of Pulvis Carui: Seeds, 6.68, 5.72, 7.16 p. c.; Pulvis, 5.87, 6.51, 7.05 p.c.

Analysis of 'drawn' or exhausted Caraways.—*Analyst* '96, 207.

Preparations.

AQUA CARUL. CARAWAY WATER.

Caraway Fruit, 1; Water, 20: distil 10. = (1 in 10).

Dose.—Not given in B.P.; 1 to 2 fl. oz.

Foreign Pharmacopœias.—Official in Swed.; not in the others.

OLEUM CARUL. OIL OF CARAWAY.

The Oil distilled from Caraway Fruit.

Dose.— $\frac{1}{2}$ to 3 minims.

Description.—Colourless or pale yellow, with the characteristic odour of the fruit, and a spicy taste. Sp. gr. .910 to .920.

Caraway Oil consists principally of a Hydrocarbon **Carvene** ($C_{15}H_{24}$) and an oxidised body **Carvol** ($C_{16}H_{14}O$). These occur in different proportions in the Oil according to its source and method of distillation. It is the Carvol to which the Oil owes its medicinal properties. The higher the sp. gr. and the greater the solubility in 50 p.c. Alcohol, the more Carvol is likely to be contained in the sample. The sp. gr. of the Oil varies between very wide limits. We have bought samples as low as .889, but the usual range is between .910 and .925.

Carvol (Carvone).—Sp. gr. .960. When obtained from the Oils of Caraway and Dill is dextrogyrate, and Lævogyrate when obtained from Oil of Spearmint. It can be assayed by conversion into Carvoxime by treatment with Hydroxylamine Hydrochlorate.—*P.J.* '96, i. 342; *C.D.* '96, i. 778.

Foreign Pharmacopœias.—Official in Austr., Ger., Port., Swiss, and U.S.; Fr., Huile Volatile de Carvi; Dan., Norw. and Swed., Aetheroleum Carvi; Russ., sp. gr. .900—.960; not in the others.

CARYOPHYLLUM.

CLOVES.

The dried flower-buds of *Eugenia caryophyllata*.

Imported from Penang, Bencoolen, Amboyna, and Zanzibar.

Medicinal Properties.—Stimulant, aromatic, and carminative, antispasmodic, antiseptic. Administered to check nausea, vomiting, and flatulence, and to promote digestion. But chiefly used as an adjuvant to other medicines. The oil is a useful ingredient in liniments for whooping cough and bronchitis.

Dose.—Not given in B.P.; 5 to 10 grains.

Prescribing Notes.—The Oil may be given on a lump of sugar, and is a useful constituent of aperient pill masses. The Infusion is a nice flavouring for many mixtures.

Incompatibles.—See under Infusum Caryophylli.

Official Preparations.—Infusum Caryophylli, and Oleum Caryophylli. Used in the preparation of Infusum Aurantii Compositum. Contained in Pulvis Cretæ Aromaticus. The Oil is contained in Pilula Colocynthis Composita, and Pilula Colocynthis et Hyoseyami.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Fr. (Girofles), Ger., Hung., Ital. (Garofani), Jap., Mex. (Clavo de Especia), Norw., Port. (Cravinho), Russ., Span. (Clavo), Swed., Swiss and U.S.; not in Dutch.

Description.—About five-eighths of an inch (fifteen millimetres) long, each consisting of a dark-brown, wrinkled, subcylindrical, somewhat angular calyx tube, which tapers below and is surmounted by four thick, rigid, patent teeth, between which are four paler imbricated petals enclosing numerous stamens and a single style. Odour strong, fragrant, and spicy; taste very pungent and aromatic.

Tests.—Cloves should emit oil when indented with the finger-nail. Incinerated they should not yield more than 7 p.c. of ash.

The ash was determined from three samples of Cloves and three samples of the Powder: Cloves yielded, 4.78, 4.82, 5.11 p.c.; Powder, 6.13, 6.97, 6.97 p.c.

Microscopical examination of Cloves.—*A.J.P.* '94, 479; *P.J.* (3) xxv. 260.

The amount of Tannin present in Cloves ranges from 10 to 13 p.c. of the weight of the spice as found in the market. The Tannin of Cloves has the same percentage composition as Gallotannic Acid, and yields the same decomposition products as that compound; hence, they are identical.—*A.J.P.* '95, 306.

By substituting a 50 p.c. solution of Sodium Salicylate for Water in the retort, when distilling the Oil from Cloves, considerably higher results could be obtained. In the case of Cloves, an average of 19.45 p.c. of Oil, containing 84.52 p.c. of Eugenol, was obtained, as compared with 17.75 p.c. of Oil, containing 79.44 p.c. of Eugenol, in the Water distillation.—*Analyst* '94, 250; *J.C.S. Abs.* '94, ii. 335.

Preparations.

INFUSUM CARYOPHYLLI. INFUSION OF CLOVES.

Cloves, bruised, 1; Distilled Water, boiling, 40: infuse in a covered vessel for fifteen minutes; strain. = (1 in 40).

Time reduced from half an hour to fifteen minutes.

Dose.— $\frac{1}{2}$ to 1 fl. oz.

Incompatibles.—Lime Water, salts of Iron, mineral acids, Gelatin.

(Not in the other Pharmacopœias.)

OLEUM CARYOPHYLLI. OIL OF CLOVES.

The Oil distilled from Cloves.

Solubility.—1 in 60 of Alcohol (60 p.c.); in all proportions of Alcohol (90 p.c.), Ether, and Strong Acetic Acid.

Dose.— $\frac{1}{2}$ to 3 m̄mims.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex., Norw., Port., Russ., Span., Swed., Swiss and U.S.

Description.—Colourless or pale yellow when recent, but gradually becoming reddish-brown, having the strong odour and taste of Cloves.

Tests.—Sp. gr. not below 1.050. An Alcoholic Solution yields a blue colour with Test-solution of Ferric Chloride. Shaken with its own volume of Strong Solution of Ammonia, it forms a semi-solid yellowish mass.

The principal constituent of Clove Oil is **Eugenol**, a phenol having the formula, $C_{10}H_{12}O_2$; details for its estimation by Thoms' method will be found in *P.J.* (3) xxii. 451. The percentage of Eugenol in the oil varies between 77 and 90 p.c., and it is found that a 'stem' Oil yields as high an average as that from the flower-buds.

Eugenol can be approximately determined by treating the oil with a 10 p.c. aqueous

solution of Potassium Hydroxide, warming the mixture, and measuring the uncombined portion which rises to the top.—*P.J.* (3) xxv. 951.

The presence of **Acetyluengenol** has also been demonstrated.—*J.C.S. Abs.* '98, i. 37; *J.S.C.I.* '97, 1050; *A.J.P.* '97, 638.

Sp. gr. (several examples examined) 1.041 to 1.063; the majority were over 1.055. Schimmel states the sp. gr. of a genuine Oil never falls below 1.060; but commercial Oil in this country rarely exceeds that figure.

Note on characters of Clove Oil.—*P.J.* (3) xxv. 950.

CASCARA SAGRADA.

CASCARA SAGRADA.

B.P. Syn.—RHAMNI PURSHIANI CORTEX; SACRED BARK.

The dried bark of *Rhamnus Purshianus*.

Medicinal Properties.—Tonic laxative. Acts principally on the large intestine. Indicated in obstinate and habitual constipation, especially of old persons, and in an atonic condition of the stomach and bowels, as in anæmia. It should not be given as a purgative, but in such a constant continuous manner that a normal condition will be brought about. It is better to give two small doses, say 20 minims of the liquid extract night and morning, than one large dose. The dose should be reduced gradually.

Prescribing Notes.—Usually given in the form of Extract in Pills or Pilules, or one of the fluid preparations. The Extract is best made into Pills with Alcohol (90 p.c.) with the addition of one-tenth of its weight of Gum Acacia in powder; also obtainable in the form of Compressed Tablets. Capsules may be had containing a very concentrated Fluid Extract, equivalent to 15 and 30 minims of the ordinary Fluid Extract, and other strengths as desired.

Elixir of Cascara (Kasak) is an agreeable and reliable preparation. See below.

Official Preparations.—Extractum Cascaræ Sagradæ, Extractum Cascaræ Sagradæ Liquidum, and Syrupus Cascaræ Aromaticus.

Not Official.—Capsules of Cascara, Elixir of Cascara (Kasak), Elixir Cascaræ Sagradæ, Extractum Cascaræ Liquidum Insuperum, Syrupus Cascaræ Sagradæ.

Foreign Pharmacopœias.—Official in Austr., Dan., Fr., Mex., Norw., Russ., Swiss and U.S.; not in the others.

Description.—In quilled, channelled, or nearly flat pieces, frequently about four inches (ten centimetres) long, three-quarters of an inch (eighteen millimetres) wide, and about one sixteenth of an inch (one millimetre and a half) thick. It possesses a nearly smooth dark purplish-brown cork, marked with scattered, transversely elongated lenticels, but usually more or less covered with patches of silvery-grey lichen; and when these are removed the exposed cork is of a brownish-red colour. The inner surface is reddish-brown with faint transverse corrugations, and longitudinal striations. The fracture is short, and near the inner surface somewhat fibrous. The bark has a characteristic but not powerful odour, and a persistent, nauseous and bitter taste.

The glucoside **Purshianin** has been separated in the form of dark-brown red crystals, melting at 237° C. and found to yield Emodin and a dextro-rotatory, non-fermentable sugar.—*P.J.* '98, ii. 49.

Preparations.

EXTRACTUM CASCARÆ SAGRADÆ. EXTRACT OF CASCARA SAGRADA.
B.P.Syn.—EXTRACTUM RHAMNI PURSHIANI. (ALTERED.)

Moisten Cascara Sagrada, in No. 20 powder, with Distilled Water, and let it remain a few hours to soften and swell; then place it loosely in a percolator and percolate with more Distilled Water until it is exhausted. Evaporate on a water-bath to dryness.

It is now an aqueous extract instead of alcoholic, and evaporated to dryness.

Dose.—2 to 8 grains.

Foreign Pharmacopœias.—Official in Fr. and Mex.; not in the others.

EXTRACTUM CASCARÆ SAGRADÆ LIQUIDUM. LIQUID EXTRACT OF CASCARA SAGRADA. *B.P.Syn.*—EXTRACTUM RHAMNI PURSHIANI LIQUIDUM. (MODIFIED.)

Cascara Sagrada, in No. 20 powder, 20; Alcohol (90 p.c.), 4; Distilled Water, a sufficient quantity. Moisten the Cascara Sagrada with 15 of the Distilled Water, and set the mixture aside for six hours; then place it loosely in a percolator and percolate with more of the Distilled Water until the powder is exhausted; evaporate the percolate to 12; add the Alcohol, previously mixed with 4 of the Distilled Water or with sufficient to make up the volume of the mixed liquids to 20 of the Liquid Extract. = (1 in 1).

Process altered and Alcohol (90 p.c.) used in place of Rectified Spirit.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

A specific gravity would have been useful if included in the B.P.—*P.J.* '98, i. 893.

Cascara and Cascara Extracts.—*P.J.* '98, i. 893.

Foreign Pharmacopœias.—Official in Austr., Dan., Mex., Norw., Swiss and U.S., with dilute Spirit; not in the others.

Given with Ferri et Ammonii Citras and Ammonia.—*B.M.J.* '88, ii. 691.

SYRUPUS CASCARÆ AROMATICUS. AROMATIC SYRUP OF CASCARA.
(New.)

Liquid Extract of Cascara Sagrada, 8; Tincture of Orange, 2; Alcohol (90 p.c.), 1; Cinnamon Water, 3; Syrup, 6. Mix.
= (1 of Liquid Extract in 2 $\frac{1}{2}$).

This is the same formula as the B.P.C. Elixir Cascaræ Sagradæ.

Dose.— $\frac{1}{2}$ to 2 fl. drm.

Not Official.

CAPSULES OF CASCARA.—Two strengths, containing concentrated extract equal to 15 and 30 minims respectively of Fluid Extract.

ELIXIR OF CASCARA (Kasak).—Under this title is sold a proprietary preparation of Cascara, which is palatable, uniform, and reliable.

Dose.— $\frac{1}{2}$ fl. oz. for an adult, 1 or 2 fl. drm. for a child.

ELIXIR CASCARÆ SAGRADÆ (*B.P.C.*)—Now official as Syrupus Cascaræ Aromaticus.

EXTRACTUM CASCARÆ LIQUIDUM INSIPIDUM.—It having been stated that the disagreeable bitterness of Cascara Sagrada could be prevented or removed by treatment with Magnesia, 'tasteless Extracts' have attracted considerable attention. Evidence both as to their tastelessness and efficacy is decidedly conflicting.

In any case their action seems uncertain and the balance of evidence is against them.—*P.J.* (3) xix. 254—257; xx. 491; *C.D.* '88 ii. 169, 267, 376; '89, i. 19.

SYRUPUS CASCARÆ SACRADÆ (*B.P.C.*).—Liquid Extract of Cascara Sagrada, 4; Liquid Extract of Liquorice, 3; Carminative Tincture, $\frac{1}{4}$; Syrup to make 20: mix.

Dose.—1 to 4 fl. drm.

CASCARILLA.

CASCARILLA.

The dried bark of *Croton Eluteria*.

It contains from $\frac{1}{2}$ to 2 p.c. of an aromatic Oil.

Medicinal Properties.—Aromatic and stomachic. With some physicians it is a favourite bitter tonic. Used in dyspepsia, chronic diarrhœa, dysentery, and in recovery from acute diseases.

Prescribing Notes.—The Infusion quickly changes, and will scarcely keep good for a day in summer, but when prescribed with an aromatic Tincture it keeps well.

The Tincture is frequently prescribed with the diluted mineral acids, which, however, usually causes a separation of the resin.

Official Preparations.—Infusum Cascarillæ and Tinctura Cascarillæ.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Ital., Jap., Norw., Port., Russ., Swed., Swiss and U.S.; not in Hung., Mex., or Span.

Description.—In quills, from one to three inches (two and a half to seven and a half centimetres) or more in length, and from about one-sixth to half an inch (four to twelve millimetres) in diameter, or in small curved pieces. The outer layer consists of a dull-brown or dark-grey longitudinally wrinkled cork, frequently marked with small longitudinal and transverse cracks, and more or less completely covered with silvery-grey patches spotted with minute black dots; it easily separates, disclosing a brown or dark-grey inner layer marked with longitudinal and transverse furrows. Fracture short, and resinous; the transverse section exhibits under a lens dark reddish-brown bast traversed by thin whitish medullary rays, but no groups of sclerenchymatous cells. It has an agreeable aromatic odour, especially when burned, and an aromatic, bitter taste.

In addition to the substance Betaïne, the bark contains an alkaloid Cascarilline.—*P.J.* '96, ii. 95; '98, i. 279; *C.D.* '96, ii. 195.

Preparations.

INFUSUM CASCARILLÆ. INFUSION OF CASCARILLA. (ALTERED.)

Cascarilla, in No. 10 powder, 1; boiling Distilled Water, 20: infuse in a covered vessel for fifteen minutes; strain. = (1 in 20).

Half the strength of B.P. '85, and time reduced.

Dose.— $\frac{1}{2}$ to 1 fl. oz.

Incompatibles.—Lime Water and metallic salts.

(Not in the other Pharmacopœias.)

TINCTURA CASCARILLÆ. TINCTURE OF CASCARILLA. (ALTERED.)

Cascarilla, in No. 40 powder, 4; Alcohol (70 p.c.), a sufficient

quantity. Moisten the powder with 3 of the Alcohol, and complete the percolation process. The resulting Tincture should measure 20.

=(1 in 5).

Now 1 in 5 instead of 1 in 3, and Alcohol (70 p.c.) used in place of Proof Spirit.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Austr., 1 in 10; Belg., Dan., Fr., Jap., Norw., Russ., Swed. and Swiss, 1 in 5; not in the others.

Not Official.

CASSIÆ OLEUM.

OIL OF CASSIA.

A volatile Oil distilled from *Cinnamomum Cassia*.

This Oil is official in the German and United States Pharmacopœias under the name 'Oleum Cinnamomi.'

A yellowish or brownish liquid, becoming darker and thicker by age and exposure to the air, having the characteristic odour of Cassia, and a sweetish, spicy, and burning taste.

Soluble in an equal volume of Alcohol, the solution being slightly acid to Litmus paper; also soluble in an equal volume of Glacial Acetic Acid.

Tests.—Sp. gr. 1.055 to 1.065 at 15° C. (59° F.).

When shaken with a saturated solution of Sodium Bisulphite, it solidifies to a crystalline mass.

If 4 drops of the Oil, contained in a test-tube, be cooled to 0° C. (32° F.), and then shaken with 4 drops of fuming Nitric Acid, crystalline needles or plates will be formed.

If a portion of the Oil be shaken with water, and the liquid passed through a wet filter, the clear filtrate should give, with a few drops of basic Lead Acetate T.S., a white turbidity, without a yellow colour (absence of Oil of Cloves).

If 4 drops of the Oil be dissolved in 10 c.c. of Alcohol, the subsequent addition of a drop of Ferric Chloride T.S. should produce a brown, but not a green or blue colour (absence of Oil of Cloves or of Carbolic Acid).

Schimmel states that this Oil is freely adulterated and that genuine samples contain at least 75 p.c. of Cinnamic Aldehyde.

Notes on the Bisulphite process for estimating the Cinnamic Aldehyde.—*A.J.P.* '96, 194; *J.S.C.I.* '95, 986.

CASSIÆ PULPA.

CASSIA PULP.

The pulp obtained from the pods of *Cassia Fistula*.

Imported from the East or West Indies.

Medicinal Properties.—Laxative. Useful in small doses for habitual constipation. Large doses occasion nausea, flatulence, and griping; generally given in combination.

Dose.—Not given in B.P.: 60 to 120 grains as a laxative; 1 to 2 oz. as a purgative.

Official Preparation.—Contained in *Confectio Sennæ*; 1 part in 8 nearly.

Foreign Pharmacopœias.—Austr., Fruit and Pulp; Belg., Fruit and Extract;

Fr., Pulpe de Casse, also Extrait de Casse; Ital., Mex., Port., Span., Swiss and U.S., Fruit; not in the others.

Description.—The pods are from a foot and a half to two feet (thirty-five to fifty centimetres) long, and from three-quarters to one inch (eighteen to twenty-five millimetres) in diameter. They are nearly cylindrical in shape, shortly stalked, blackish-brown, very hard, indehiscent, the sutures being marked by two smooth longitudinal bands. They are divided internally by thin transverse partitions into numerous cells, each containing a smooth flattish-oval reddish-brown seed, surrounded by pulp. The Pulp, which alone is official, is viscid and nearly black, with a faint odour and sweet taste.

Not Official.

CASTOREUM.

The dried preputial follicles and their secretion, obtained from the Beaver, *Castor Fiber*, the oil sacs being rejected.

Medicinal Properties.—Moderately stimulant and antispasmodic; occasionally used in hysteria and spasmodic disorders.

Dose.—Of the powder 5 to 10 grains.

Foreign Pharmacopœias.—Official in all except Ger., Jap. and U.S.

Russian Castor contains 4.5 p.c. and Canadian 2 p.c. of Castorin. The Tincture forms with water a milky liquid which on the addition of Ammonia becomes clear when made with Russian Castor, but remains cloudy when made with Canadian.—*Hager.*

Analysis of Castoreum du Gardon.—*P.J.* '97, i. 161.

Preparation.

TINCTURA CASTOREI.—Castor, in coarse powder, 1; Alcohol (90 per cent), 20; macerate seven days, agitating occasionally, strain, press, and add sufficient Alcohol to make 20. = (1 in 20).

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Official in Austr., Dan., Hung., Norw., Port. and Swed., 1 in 5; Dutch, 1 in 8; Belg., Fr., Russ. and Swiss, 1 in 10; Mex., 1 and 10; Span., 1 in 25; all by weight. Not in Ger., Ital., Jap. or U.S.

CATAPLASMATA.

These preparations are now deleted from the B.P.

CATECHU.

CATECHU.

B.P. Syn.—CATECHU PALLIDUM.

An extract of the leaves and young shoots of *Uncaria Gambier*.

Prepared in Singapore and in other places in the Eastern Archipelago.

Terra Japonica is a trade term (now almost obsolete) applied both to Catch and Gambier.

Solubility.—Almost entirely soluble in boiling Water. 75 p.c. is soluble in Alcohol (90 p.c.). Of 100 parts, only 50 to 60 are dissolved by cold Water, and the solution is bright.

Medicinal Properties.—A powerful astringent. Used chiefly in diarrhœa and dysentery, also as an astringent for hæmorrhage and discharges from mucous membranes. Lozenges are the best medium for administering it in relaxed conditions of the throat and in ulcers of the mouth.

Dose.—5 to 15 grains.

Incompatibles.—The Alkalis, metallic salts, and Gelatin.

Official Preparations.—Pulvis Catechu Compositus, Tinctura Catechu, and Trochiscus Catechu.

Not Official.—Catechu Nigrum.

Foreign Pharmacopœias.—Official in Ger., Jap., Port., Cato; not in the others. See CATECHU NIGRUM, p. 198.

Description.—In cubes which are sometimes more or less agglutinated. Each side measures about an inch (twenty-five millimetres). They are deep reddish-brown externally, pale cinnamon-brown internally, porous and friable. When examined under the microscope they are found to consist chiefly of minute acicular crystals. Taste at first bitter and very astringent, but subsequently sweetish; no odour.

Tests.—Almost entirely soluble in boiling Water. 70 p.c. should be soluble in Alcohol (90 p.c.). Catechu should not afford any characteristic reaction with the tests for Starch, and should not yield more than 5 p.c. of ash when incinerated.

The pale Catechu being already in the Edin. Ph., the B.P. 1864 retained it with the Black; but the black is the one adopted by other Pharmacopœias, and is preferred in the arts and manufactures; it is well known to be far superior to the pale in astringency, and always to be had of good quality; it is therefore a matter of surprise and regret that it was rejected from the British Pharmacopœia, and not again included in the subsequent editions.

PULVIS CATECHU COMPOSITUS. COMPOUND POWDER OF CATECHU.

Catechu, 4; Kino, 2; Krameria Root, 2; Cinnamon Bark, 1; Nutmeg, 1: all in powder; mix. = (1 in $2\frac{1}{2}$).

Keep it in a stoppered bottle.

Dose.—10 to 40 grains.

(Not in the other Pharmacopœias.)

TINCTURA CATECHU. TINCTURE OF CATECHU. (ALTERED.)

Catechu, in coarse powder, 4; Cinnamon Bark, bruised, 1; Alcohol (60 p.c.), 20: prepare by the maceration process. = (1 in 5).

Now 1 in 5 instead of 1 in 8, and Alcohol (60 p.c.) used in place of Proof Spirit.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Official in U.S. (Tinct. Catechu Co.), 1 in 10; Austr., Belg., Fr. (Tinct. Cachou), Dutch, Ger., Jap., Port., Russ., and Swiss, 1 in 5; Mex., 1 and 5; all by weight (except U.S.), and with **Black Catechu**. Not in the others.

TROCHISCUS CATECHU. CATECHU LOZENGE.

Catechu, 1 grain. Mix with the simple basis to form a Lozenge.

Dose.—Not given in B.P.; 1 to 6 lozenges.

Foreign Pharmacopœias.—Official in U.S., 1 grain Black Catechu in each; Belg. (Tabella) 3 grains in each; Dutch, about $1\frac{1}{2}$ grains in each; Ital., Pastiglie di Catechu; not in the others.

Not Official.

CATECHU NIGRUM.—BLACK CATECHU, PEGU CATECHU, CUTCH.—An extract from the heart wood of *Acacia Catechu*, dried and imported from Pegu. It generally occurs in irregularly shaped blackish-brown masses, astringent, and bitter in taste.

Solubility.—Of 100 parts, only 88 are dissolved by cold Water, the solution being very turbid. 60 parts of Isinglass precipitate the whole of the astringent matter.

Dose.—5 to 15 grains.

Foreign Pharmacopœias.—Official in Austr., Belg., Dutch, Fr. (Cachou), Ger., Ital., Jap., Mex., Port. (Cato), Russ., Span., Swiss and U.S.; not in the others.

* * As **GUMMI RUBRUM** is advantageously used as a substitute for Catechu, it may be proper to mention it here, but it will be found in its alphabetical order with its preparations.

CERA ALBA.

WHITE BEESWAX.

Yellow Beeswax which has been bleached by exposure to moisture, air, and light.

Solubility.—Entirely in Oil of Turpentine, insoluble in Alcohol (90 p.c.); slightly, and not uniformly, soluble in (cold) Ether; about 1 in 100 of boiling Alcohol (90 p.c.); 1 in 10 of boiling Ether.

Medicinal Properties.—Emollient; chiefly employed as an ingredient in Ointments.

Official Preparations.—Contained in *Pilula Phosphori*, *Suppositoria Acidi Carbolici*, *Unguentum Aquæ Rosæ*, and *Unguentum Cetacei*.

Not Official.—*Unguentum Simplex*, and Cold Cream.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Fr., Ger., Hung., Ital., Norw., Port. (*Cera branca*), Mex., Russ., Span., Swed., Swiss and U.S.; not in Dutch and Jap.

Description.—Hard, nearly white, translucent masses.

Test.—It should respond to the tests for Yellow Beeswax.

The Acid value might be expected to be a trifle higher than that of *Cera Flava*.

Not Official.

UNGUENTUM SIMPLEX.—Formerly Official in B.P., but now omitted.

Foreign Pharmacopœias.—Official in Austr. and Hung., Lard 8, White Wax 2; Belg., Lard 17, White Wax 3; Dutch, Yellow Wax 3, Olive Oil 7; Jap., Yellow Wax 1, Sesame Oil 2; Mex., White Wax 1, Sesame Oil 3; Swiss, White Wax 30, Olive Oil 70, Benzoin 2; U.S., Lard 8, Yellow Wax 2; Fr. (*Cérat Simple*), Oil of Almonds 6, White Wax 2; Ger. (*Unguentum Cereum*), Olive Oil 7, Yellow Wax 3; Port. (*Cerato Simple*), White Wax 3, Almond Oil 7; Span. (*Cerato Simple*), White Wax 1, Almond Oil 3; Swed. (*Ceratum Album*), White Wax 1, Spermaceti 1, Benzoated Lard 3, also (*Ceratum Flavum*) Yellow Wax 1, Olive Oil, 2; Dan. and Norw. (*Ung. Cerae*), and Russ. (*Ung. Cereum*), Olive Oil 3, Yellow Wax 1.

COLD CREAM.—White Beeswax, 1; Spermaceti, 1; Oil of Almonds, 8; Rose Water, 11; Otto of Rose to perfume it. Melt together, by means of a water-bath, the Oil, Spermaceti, and Beeswax, add the Otto, strain through muslin into the Rose Water; stir together whilst gently warming until water globules are no longer visible, and the mixture is of proper consistence to pour into pots without separating.

CERA FLAVA.

YELLOW BEESWAX.

Prepared from the honeycomb of the Hive-Bee, *Apis mellifica*.

When quite fresh, is of a golden yellow, but on keeping gets brown.

Solubility.—The same as Cera Alba.

Medicinal Properties.—Chiefly used in medicine as an ingredient of plasters and ointments, and is preferable to White Beeswax for the purpose, the ointments keeping a long time without becoming rancid.

Official Preparation.—Cera Alba. Used in the preparation of Emplastrum Calefaciens, Emplastrum Cantharidis, Unguentum Menthol, Emplastrum Picis, Unguentum Hydrargyri Compositum, Unguentum Picis Liquidæ, Unguentum Resinæ and Unguentum Staphisagriæ.

Not Official.—Aseptic Wax.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr. (Cire Jaune), Ger., Hung., Ital., Jap., Mex. (Cera Amarilla); Norw., Port. (Cera Amarilla), Russ., Span., Swed., Swiss and U.S.

Description.—Firm, breaking with a granular fracture, yellowish, having an agreeable honey-like odour. Not unctuous to the touch.

Tests.—It should be readily and entirely soluble in hot Oil of Turpentine. It should not yield more than 3 p.c. to cold Alcohol (90 p.c.), nor more than 50 p.c. to cold Ether, and nothing to Water or to boiling Solution of Sodium Hydroxide, the two latter liquids after filtration neither being turbid nor yielding a precipitate on the addition of Hydrochloric Acid. (Absence of fatty acids, Resin, and Japan wax.) Sp. gr. .960 to .970. Melts at 144.5° to 147° F. (62.5° to 63.9° C.) when tested in the following manner:—Liquefy a small piece, and draw a little of the liquid Beeswax up into a capillary tube of not more than one millimetre in internal diameter; after it has been allowed to cool for three hours, fix a piece of the filled capillary tube to the bulb of a thermometer by thread; immerse the bulb and tube in a beaker of Water and heat the latter gradually on a water-bath; at the moment the opaque rod of Beeswax becomes transparent, note the temperature. The solidifying point is 2° to 3° lower than the melting point. 5 grammes of the Beeswax melted in and mixed with boiling Alcohol (90 p.c.), should require for neutralisation not less than 1.6 c.c. of Normal Alcoholic Volumetric Solution of Potassium Hydroxide, using Phenol-phthalein as an indicator. Upon the further addition of 20 c.c. of the Volumetric Solution, and well boiling for one hour under a reflux condenser, not less than 6.2 nor more than 6.8 c.c. should be found to have combined with the Beeswax, as shown by the titration of the uncombined alkali with Volumetric Solution of Sulphuric Acid. If 5 grammes

of Beeswax are heated for fifteen minutes with 25 grammes of Sulphuric Acid to 320° F. (160° C.) and the mixture diluted with Water, no solid, wax-like body should separate (absence of Paraffin). Beeswax should not yield any characteristic reaction with the tests for Starch.

Guyer, in an extensive paper on Beeswax analysis, recommends the following figures:—0.962 to 0.966 for specific gravity, and 144.5 to 147.2° F. (62.5°—64° C.) for melting point. He mentions that it is perfectly possible to add adulterants which will enable a sample to pass these tests, and suggests the determination of the Acid and Ester value, on the 'permillage' system (number of milligrammes of KHO absorbed by 1 gramme Beeswax). The average chemical constants of Beeswax thus expressed are:—Acid value 20, Ether value 75, Saponification value (a combination of the A.V. and E.V.), 95. The official figures correspond to:—A.V. not less than 18, E.V. 69 to 75, S.V. 87 to 93. In addition to the above tests every sample should be boiled with Alcohol (90 p.c.), filtered when cold, and an equal volume of water added to one part, and an equal volume of Calcium Chloride Solution to another. In both cases the mixture should remain bright and clear (absence of Japan Wax, Resin and Tallow). He also recommends inclusion of Iodine absorption on doubtful samples, those absorbing Iodine containing a foreign body, probably Carnauba Wax, Tallow, or Resin.—*P.J.* '96, ii. 384, 445; '97, i. 308.

Remarks on the Iodine absorption of Beeswax and its impurities.—*J.S.C.I.* '98, 1075.

B.P. does not state how the sp. gr. is to be taken. A ready method will be found in *P.J.* '96, ii. 385.

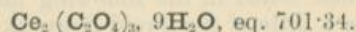
Not Official.

ASEPTIC WAX.—Beeswax, 87; Almond Oil, 12; Salicylic Acid, 1. Melt the Beeswax and Oil, strain through muslin, add the Salicylic Acid, heat to 150° C. (300° F.) in an oil-bath; pour into stoppered bottles, which have been sterilised, and when cold add to each bottle sufficient aqueous solution of Mercuric Chloride (1 in 500) to cover the Beeswax.

This Wax was made by us for Mr. Victor Horsley, who used it for arresting hæmorrhage from cranial bones, by smearing it over the bleeding surface.—*B.M.J.* '92, i. 1165.

CERII OXALAS.

CERIUM OXALATE.



It may be obtained by interaction of a soluble Cerium salt and a soluble Oxalate. It usually contains some Lanthanum Oxalate and Didymium Oxalate.

An exhaustive paper on Cerium and its salts.—*P.J.* (3) xxv, 337, 377, 418.

Medicinal Properties.—Gastric sedative. Of great value in chronic vomiting, and vomiting during pregnancy, and of phthisis; also in dyspepsia, gastrodynia, and pyrosis. It has been strongly recommended in sea-sickness, in doses of 10 to 20 grains every three hours. Given with success in spasmodic cough of gastric origin.

Dose.—2 to 10 grains.

Prescribing Notes.—It is taken in 5 to 15 grain doses as a powder mixed with a little Water; also given in **cachets**.

It can be safely administered in 10 grain doses 3 times a day for many days in succession; the only unpleasant symptom when so used was slight dryness of the

mouth: that appeared after several days. It was most efficacious in the treatment of chronic cough, and the initial dose should be 5 grains. It did not disturb the stomach; on the contrary, relieved nausea and improved digestion. (Conclusions arrived at by the Committee of the New York Therapeutical Society on April 9, 1880. *New York Medical Record*, May 1, 1880.)

Cerium Oxalate in the gastric crisis of Tabes.—*L.* '96, ii. 551.

Foreign Pharmacopœias.—Official in Dutch, Oxalas Cerosus; Mex. and Port. Oxalato de Cerio; Swed., Oxalas Cerosus Venalis; Jap. and Swiss, Cerium Oxalicum; U.S.; not in the others.

Description.—An almost white granular powder insoluble in Water.

Tests.—It is decomposed at a dull red heat, yielding a reddish-brown powder which dissolves completely and without effervescence in boiling Hydrochloric Acid; the resulting solution gives with a saturated solution of Potassium Sulphate a white crystalline precipitate. When incinerated it loses 53 p.c. in weight. It should yield no characteristic reaction with the tests for Arsenium, Iron, Aluminium, Zinc, Calcium, Carbonates, or Phosphates.

CETACEUM.

SPERMACEUM.

A concrete fatty substance, obtained, mixed with Oil, from the head of the Sperm Whale, *Physeter macrocephalus*. It is separated from the Oil by filtration and pressure, and is afterwards purified.

The Sperm Whale inhabits the Pacific and Indian Oceans.

Cetine or Palmitate of Cetyl, when saponified yields Ethal (the Hydrate of Cetyl) and not Glycerin (the Hydrate of Glyceryl). Most Oils and Fats are Oleates, Palmitates, and Stearates of Glyceryl, which when saponified yield Glycerin and Oleates, Palmitates and Stearates of the metals.

Solubility.—Slightly in Alcohol (90 p.c.); 1 in 80 of boiling Alcohol (90 p.c.); 1 in 6 of Ether; 1 in 1 of boiling Ether; 4 in 5 of Chloroform, and the fixed and volatile oils.

Medicinal Properties.—Emollient. It is much employed for ointments and cerates.

Official Preparations.—Unguentum Cetacei. Contained in Unguentum Aquæ Rosæ, and Unguentum Capsici.

Not Official.—Unguentum Cetacei sine Benzoino.

Foreign Pharmacopœias.—Official in all. Fr., Blanc de Baleine; Ital., Cetina; Mex., Esperma; Span., Esperma de Ballena.

Description.—In crystalline, pearly-white, glistening masses, which are translucent, slightly unctuous to the touch, and have little taste or odour. It is reducible to powder by the aid of a little Alcohol (90 p.c.).

Tests.—Melting point 114.8°—122° F. (46°—50° C.), when tested by the method described under 'Cera Flava.' .2 gramme dissolved, by the aid of a water-bath, in 20 c.c. of Alcohol (90 p.c.), two drops of Solution of Phenol-phthalein being added, should not require

more than one drop of Volumetric Solution of Sodium Hydroxide to produce a permanent red colour (limit of acidity). Boiled with Alcohol (90 p.c.), and the mixture cooled and filtered, the filtrate should not afford a flocculent precipitate on the addition of Water (absence of Stearic Acid).

Most samples of Spermaceti contain a trace of free acid, but the quantity .2 grammes ordered in B.P. is insufficient for the test. We are in the habit of using .5 grammes, which we believe to be the usual quantity.

Kebler records the melting point of Spermaceti as 43°–47° C. in a number of experiments in 1886, and as 43°–46° in a second series made in 1897.—*A.J.P.* '96, 9, and '97, 105.

The Iodine Absorption of pure Spermaceti is practically *nil*.

Preparation.

UNGUENTUM CETACEI. SPERMACETI OINTMENT.

Spermaceti, 5; White Beeswax, 2; Almond Oil (by weight), 18; Benzoin, in coarse powder, $\frac{1}{2}$. Melt together the Spermaceti, Beeswax, and Almond Oil; add the Benzoin, and, frequently stirring the mixture, continue the application of heat for two hours; remove from the source of heat; strain; and stir the Ointment constantly until cold.

The Almond Oil is now by weight instead of by measure.

It would be better to omit the Benzoin, which was first added in 1885; it converts this emollient preparation into one which is irritating: *see* below.

The following are called **Unguentum Cetacei**—(All by weight):—

- Dan. Spermaceti 3, White Wax 1, Oil of Almonds 24, Rose Water 12.
- Norw. Spermaceti 6, White Wax 6, Oil of Almonds 58, Rose Water 30.
- Russ. Spermaceti 3, White Wax 3, Olive Oil 14, Rose Water 2.
- Swed. Spermaceti 5, White Wax 4, Oil of Almonds 36, Rose Water 16.

The following are called **Ceratum Cetacei**—(All by weight):—

- Austr. Spermaceti, White Wax, Oil of Almonds, equal parts.
- Hung. Spermaceti 8, White Wax 8, Lard 9.
- Port. Spermaceti 1, White Wax 1, Oil of Almonds 3.
- Span. Spermaceti 3, White Wax 2, Oil of Almonds 16, Rose Water 10.
- U.S. Spermaceti 2, White Wax 7, Olive Oil 11.

The following are called **Unguentum Leniens**—(All by weight):—

- Dutch, Spermaceti 10, Yellow Wax 5, Olive Oil 60, Water 25, Otto of Rose .05.
- Ger. Spermaceti 5, White Wax 4, Almond Oil 32, Water 16, Otto of Rose .05.

Unguentum Refrigerans—(All by weight):—

- Swiss, Spermaceti 2, White Wax 1, Almond Oil 12, Rose Water, 25.

Pomata con Olio di Mandorle:—

- Ital., Spermaceti 1, White Wax 1, Oil of Almonds (by weight) 8.

Not Official.

UNGUENTUM CETACEI SINE BENZOINO.—Spermaceti, 5; White Beeswax, 2; Almond Oil, 18: m.s.a.

The B.P. ointment made with Benzoin is unsuited for many purposes for which this ointment is useful, such as **eye** ointments, ointment for piles, &c.

Used as a cool dressing. Applied on lint to broken blisters from walking, it affords great relief, and frequently enables persons to continue the exercise without serious discomfort. It is also recommended for smearing on the feet before starting for a long walk on rough ground.

Not Official.

CETRARIA.

ICELAND MOSS.

The dried lichen, *Cetraria Islandica*. A native of the north of Europe.

Medicinal Properties.—Demulcent, nutritious, and slightly tonic.

Iceland Moss Jujubes are useful for coughs.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Port., Russ., Span., Swed. and Swiss, *Lichen Islandicus*; Mex., *Liquen de Islandia*; U.S., *Cetraria*. Not in Norw.

Description.—Almost odourless when dry, but when moistened with water has a feeble seaweed-like odour. Taste mucilaginous and bitter. A strong decoction gelatinises on cooling.

It should be freed from pine leaves, mosses, and other lichens, which are frequently found mixed with it.—*U.S.P.*

Preparations.

DECOCTUM CETRARIE.—Iceland Moss, 1; first wash with cold water, then add Distilled Water, 20; boil ten minutes, strain with gentle pressure whilst hot and wash the marc to make 20. = (1 in 20).

Dose.—1 to 4 fl. oz.

Foreign Pharmacopœias.—Official in U.S., 1 in 20; Belg., 1 in 25; Dutch, 6 in 100; Fr. (Tisane) 1 in 100; Russ., 1 in 32; Span., 1 in 67; not in the others.

SACCHARUM CETRARIE.—Iceland Moss 1, Sugar 1, Water 100. Wash the Iceland Moss with Water to remove the bitterness, then boil with 100 of Water, strain and express lightly, and in the strained liquid dissolve the Sugar and evaporate on a water-bath. When sufficiently firm remove from the bath and dry in a cupboard to a powder or scale.

GELATINA CETRARIE (Iceland Moss Jelly).—Saccharated *Cetraria* 2, Sugar 1, Water 5. Mix, boil gently till scum collects on the surface, then withdraw the heat, remove the scum, and pour into pots to cool.

Foreign Pharmacopœias.—A similar preparation is given in Austr., Belg., Fr., Ital., Norw., Port., Russ., Span. and Swed.

Cetraric Acid together with *Lichenstearic Acid* is obtained from Iceland Moss by extracting the powdered flakes with Petroleum Spirit, treating the residue left on evaporation of the solvent, with water and Sodium Carbonate and precipitating with Hydrochloric Acid.—*J.C.S. Abs.* '90, i. 600.

CARRAGEEN. IRISH MOSS.

The dried seaweed *Chondrus crispus*. It is used as an article of food on the west coast of Ireland, where it abounds. Has been proposed as a substitute for Acacia as an emulsifying agent and for the suspension of some powders.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital. (*Fuco Carageo*), Mex. (*Liquen Carragaen*); Norw., Port., Russ., Span., Swed., Swiss and U.S.

SACCHARUM CARRAGEEN.—Made like *Saccharum Cetrariae*.

GELATINA CARRAGEEN (Irish Moss Jelly).—Made like *Gelatina Cetrariae*.

Foreign Pharmacopœias.—A similar preparation is given in the Austr., Belg., Fr., Norw., Port., Russ. and Swed.

CHARTA.CHARTA SINAPIS. *See* SINAPIS.

Charta Epispastica is now omitted.

Not Official.

CHAULMUGRA OIL.*See* GYNOCARDLE OLEUM.

Not Official.

CHELIDONIUM. U.S.

CELANDINE.

The entire plant *Chelidonium majus*.The juice has been successfully used in opacities of the cornea, and is a popular application for the cure of warts.—*B.M.J.* '97, i. 25 and 354.Has been recommended chiefly by Denisenko in the treatment of cancer. He uses the extract in doses of 20 to 75 grains daily for internal cancers, and for external cancers it is supplemented by parenchymatous injections for which he employs about 1 c.c. of a mixture of Extract, 2; Water, 1; and Glycerin, 1.—*B.M.J.* '97, i. 25, 354 and 637; *B.M.J.* '97, ii. 123; *B.M.J.E.* '96, ii. 88; '97, ii. 47; *L.* '96, ii. 649 and 1,778; *L.* '97, ii. 737; *P.J.* '97, i. 86. Unfavourably commented on *P.J.* '98, i. 61.**Chelidonine.**—This alkaloid forms colourless crystals melting at 135° C.—*P.J.* '97, ii. 21; *C.D.* '97, ii. 56.

Soluble in Alcohol, insoluble in Water, and but slightly soluble in Ether.

The **Sulphate** is readily soluble in Water, the **Hydrochloride** less so, and the **Tannate** is insoluble in Water.**CHIRATA.**

CHIRETTA.

The dried plant, *Swertia Chirata*. Collected when in flower.

It is a native of, and is obtained from Northern India.

The allied species, *Ophelia angustifolia* and *O. alata*, as well as *Andrographis paniculata*, have frequently been imported into this country as *Chirata*.—*P.J.* (3) xxi. 837. A false *Chiretta* is described *P.J.* '95, ii. 197.**Medicinal Properties.**—Bitter tonic and stomachic; is without astringency; given in atonic dyspepsia with acidity.**Official Preparations.**—Infusum *Chiratae*, Liquor *Chiratae* Concentratus, and Tinctura *Chiratae*.**Foreign Pharmacopœias.**—Official in Port. and U.S.; not in the others.**Description.**—Stem three feet or more (about a metre) in length, smooth, brown or purplish-brown in colour, slightly winged and much branched above, rounded below, and containing a large, continuous, easily separable pith. Branches slender, elongated, decussate. Leaves opposite, ovate, glabrous, entire, usually with three to seven lateral veins. Flowers small, numerous, paniced. Fruits superior, bicarpellary, unilocular. No odour; taste extremely bitter.

Preparations.**INFUSUM CHIRATÆ.** INFUSION OF CHIRETTA. (ALTERED.)

Chiretta, cut small, 1; Distilled Water boiling, 20. Infuse in a covered vessel for fifteen minutes; strain. =(1 in 20).

Now 1 in 20 instead of 1 in 40, and time reduced.

Dose.— $\frac{1}{2}$ to 1 fl. oz.

(Not in the other Pharmacopœias.)

LIQUOR CHIRATÆ CONCENTRATUS. CONCENTRATED SOLUTION OF CHIRETTA. (NEW.)

Chiretta, in No. 40 powder, 10; Alcohol (20 p.c.), 25, or a sufficient quantity. Moisten the Chiretta with 5 of the Alcohol; pack in a closed percolator; set aside for three days; percolate with the remaining Alcohol, added in 10 equal portions at intervals of twelve hours; continue percolation with more Alcohol until the product measures 20.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

TINCTURA CHIRATÆ. TINCTURE OF CHIRETTA. (ALTERED.)

Chiretta, in No. 40 powder, 2; Alcohol (60 p.c.) a sufficient quantity. Moisten the powder with 2 of the Alcohol, and complete the percolation process. The resulting Tincture should measure 20. =(1 in 10).

Now 1 in 10 instead of 1 in 8, and Alcohol (60 p.c.) used in place of Proof Spirit.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Prescribed in 5 minim doses, with acids and tincture of orange to form an acid tonic mixture.

Foreign Pharmacopœias.—Official in U.S., 1 in 10; not in the others.

CHLORAL HYDRAS.

CHLORAL HYDRATE.

$\text{CCl}_3 \cdot \text{CH}(\text{OH})_2$, eq. 164.15.

Chloral Hydrate or Trichlorethylidene Glycol, is obtained by the addition of Water to the liquid Chloral produced by the action of dry Chlorine gas on Ethylic Alcohol.

Solubility.—4 in 1 of Water; 5 in 1 of Alcohol (90 p.c.); 2 in 1 of Ether; 2 in 1 of Glycerin; 1 in 1 of Olive Oil; 1 in 3 of Chloroform; 1 in 10 of Oil of Turpentine (cold), 1 in 5 boiling; 1 in 68 of Carbon Bisulphide.

Medicinal Properties.—An excellent hypnotic, producing natural and placid sleep soon after its administration. Suitable in acute mania, delirium tremens, in fevers and insomnia from other causes. Good also in asthma and whooping cough, and extreme cases of chorea; efficacious in large doses in sea-sickness. Has been found useful as a spinal depressant and antispasmodic in tetanus, uræmic and puerperal convulsions, and by intravenous injection in Strychnine poisoning. Of great value in labour, as it relieves pain, assists to dilate the os and relax the rigid perinæum, especially in primiparæ, without lessening the expulsive power of the uterus. Has

been recommended in nocturnal incontinence of urine; and children bear it well. As an anodyne it is inferior to Opium, but forms a good combination with it. It does not set up sickness or dyspepsia and constipation as Opium does.

It is not suitable for subcutaneous injection, as it is likely to produce local inflammation and abscess. It should not be given in advanced cardiac disease, nor in fatty heart.

In concentrated solution, applied locally, it acts as a vesicant.

As a pigmentum with camphor and sometimes Cocaine, it is useful for the relief of neuralgia, rheumatism, toothache and chilblains.

Effects from an overdose or repeated overdoses are excitement, convulsions, and delirium, followed by deep coma and quiet sleep from which the patient may never stir; he may however pass to death without any previous convulsions.

A case of puerperal eclampsia treated by Chloral Hydrate, Potassium Bromide, and Chloroform inhalation.—*L.* '97, ii. 915.

As a pigment in acute coryza, 10 grains in 4 drms. castor oil.—*Pr.* lv. 517.

Dose.—5 to 20 grains.

Prescribing Notes.—3 oz. will dissolve in 1 fl. oz. of Water, and measure 2 fluid ounces and $5\frac{1}{2}$ drachms; if to this be added 23 minims of Water, every minim will contain a grain of Chloral. This **solution** is handy for dispensing.

Incompatibles.—When prescribed with Alkalis, Chloroform will be liberated.

Official Preparation.—Syrupus Chloral.

Not Official.—Suppositoria Chloral, Chloral cum Camphora, Chloral cum Camphora et Cocaina, and Chloral et Phenol.

Antidotes.—Stomach pump or emetics; keep up the temperature by hot blankets, hot water bottles, &c.; injection of a pint of hot strong coffee into rectum; electro-magnetism; inhalations of Amyl Nitrite; in bad cases hypodermic injection $\frac{1}{2}$ grain of Strychnine Nitrate; artificial respiration.—*Murrell.*

$\frac{1}{2}$ of a grain of Pierotoxine has been found enough for 30 grains of Chloral.—*B.M.J.* '75, i. 506.

Foreign Pharmacopœias.—Official in Austr., Ger., Hung., Jap., Russ. and Swiss, Chloralum Hydratum; Belg. and Dutch, Hydras Chlorali; Dan., Norw. and Swed., Hydras Chloralicus; Fr., Chloral Hydraté; Ital., Cloralio Idrato; Mex., Cloral Hidratado; Port., Hydrato de Chloral; Span., Hidrato de Cloral; U.S., Chloral.

Description.—In colourless, monoclinic plates, which do not deliquesce on exposure to air. It has a pungent but not an acrid odour, and a pungent and rather bitter taste.

A discoloration of Chloral Hydrate crystals caused by a trace of Iron.—*P.J.* (3) xxv, 533.

Tests.—The aqueous solution is neutral or but slightly acid to Litmus. On the application of heat, Chloral Hydrate fuses to a colourless liquid, which, as it cools, begins to solidify at a temperature of about 120° F. (48.9° C.). In a test-tube it boils, when pieces of broken glass are immersed in it, at from 202° to 206° F. (94.4° to 96.7° C.), and on platinum foil at a slightly higher temperature it volatilises without residue. In presence of alkaline substances Chloral Hydrate is decomposed and Chloroform is liberated. If 4 grammes

be heated with 30 c.c. of the Volumetric Solution of Sodium Hydroxide, no more than 6 c.c. of the Volumetric Solution of Sulphuric Acid should be required to neutralise the Soda which remains free on the completion of the reaction. A solution in Chloroform, when mixed by agitation with Sulphuric Acid, does not impart colour to the acid (absence of certain other organic impurities). When 1 gramme of Chloral Hydrate is warmed with 6 c.c. of Water and .5 c.c. of Solution of Potassium Hydroxide, the mixture filtered, sufficient Solution of Iodine added to impart a deep brown colour, and the whole set aside for an hour, a yellow crystalline precipitate of Iodoform should not result (absence of Chloral Alcoholate). Its aqueous solution should not afford any precipitate with Solution of Silver Nitrate (absence of free Chlorides).

Squibb considers the best adjusted solidifying point to be 122° F. (50° C.). If it is higher, the sample is too much under-hydrated and prone to decompose; if lower, over-hydrated and deliquescent. For good-keeping qualities, it should be slightly under-hydrated.—*F.B.P.* '76, 166.

A boiling point under 95° C. indicates under-hydration, and the sample is likely to decompose and become acid on keeping, whilst a boiling point above 98° C. indicates an over-hydrated and deliquescent sample. Best commercial specimens begin to boil at about 96°·5 C., quickly rising to 97°, and finally to 98° C. by the time half the liquid has passed over.—*Allen*.

It is extracted from its aqueous solution by shaking out with Ether or Acetic Ether. When in very dilute solution, it may be reduced by the copper-zinc couple and estimated by silver titration.

A simple process for the determination of the amount of Chloroform yielded on treatment with Potassium Hydroxide may be conveniently conducted in a graduated tube, thus: Place in the tube 250 grain-measures of a 20 p.c. solution of Caustic Potash, and add to it gradually (keeping it cold), 50 grains of the Chloral Hydrate; cork securely and shake: allow the liquids to separate, and the number of grain-measures of Chloroform (at the bottom), to which must be added 1 for every 200 grain-measures of supernatant liquid, multiplied by 1·5 gives the grains of Chloroform, which should be not less than 35.

Preparation.

SYRUPUS CHLORAL. SYRUP OF CHLORAL.

Chloral Hydrate, 1600 grains; Distilled Water, 30 fl. drm.; Syrup, a sufficient quantity; dissolve the Chloral Hydrate in the Distilled Water; add the Syrup until the mixed product measures 20 oz. = (1 grain in 6 minims).

1 fl. drm. of this Syrup contains 10 grains of Chloral Hydrate.

Dose.— $\frac{1}{2}$ to 2 fl. drm.

Foreign Pharmacopœias.—Official in Belg. and Fr., 1 in 20, with Peppermint; Mex. 1 in 20; Port. 1 in 50; Span., 1 in 25; Swiss, 1 in 11. Not in the others.

Not Official.

SUPPOSITORIA CHLORAL.—Chloral Hydrate, 180 grains; White Beeswax, 60 grains; Oil of Theobroma, 60 grains: melt together and pour into moulds.

CHLORAL CUM CAMPHORA (*B.P.C.*)—Chloral Hydrate 1, Camphor 1: rub together in a warm mortar until completely liquefied, and filter if necessary.

As a **Pigmentum** this formula has appeared for many years in the Pharmacopœias of the London, Throat and Westminster Hospitals.

Useful application for the relief of neuralgia.

CHLORAL CUM CAMPHORA ET COCAINA.—Chloral Hydrate 5, Camphor 5, Cocaine 1: mix.

For the relief of toothache from dental caries, applied on cotton wool.—*B.M.J.* '86, ii. 131.

CHLORAL ET PHENOL.—Chloral Hydrate 1, Carbolic Acid 1: mix.

Is soluble in Water, Alcohol (90 p.c.), and Glycerin.

So long as the proportion of Carbolic Acid to Chloral does not exceed 1·7 to 1, the product will mix with Water in all proportions; beyond this limit the excess of Carbolic Acid separates on the addition of Water. As it corresponds to 3 molecular weights to 1, there is probably a chemical combination in these proportions.—*P.J.* (3) xvi. 188.

Not Official.

CHLORALAMIDUM.

Chloralamide is a compound of Chloral Anhydride and Formamide.

Is colourless crystals. Its aqueous solution should not be heated above 120° F. It is permanent in weakly acidulated solutions, but decomposed by alkalis.

Solubility.—1 in 21 of Water; 1 in 2 of Alcohol (90 p.c.).

Published solubilities of it in Water have varied considerably. The *Companion* figure (1890) has been confirmed (*P.J.* (3) xxii. 805) with the additional note that below 60° F. the solubility decreases very rapidly.—*C.D.* '92, i. 445.

Foreign Pharmacopœias.—Ger. and Russ., Chloralum formamidatum; Mex., Cloralamido; not in the others.

Medicinal Properties.—Hypnotic. It is stated to have much less influence on the heart than Chloral, and therefore may be used in cardiac disease. Other advantages are that the dose need not be increased after continued use, and that the habit of sleeping is kept up after administration has been discontinued.—*I.B.T.* '94, 468.

Given in all kinds of insomnia.—*L.* '89, ii. 849, 1192; '90, i. 339; *B.M.J.* '89, ii. 1326; '91, i. 1060; *M.P.* '89, ii. 571; *P.J.* (3) xxi. 104; *T.G.* '91, 634, 757; *Pr.* xlvii. 274. In insomnia with 'irregular' heart after influenza.—*B.M.J.* '94, ii. 1045.

Prescribed with Potassium Bromide as a remedy for sea-sickness.—*Pr.* lvi. 145.

A paper on Chloralamide as a safe hypnotic.—*Therapist* '98, 63.

Dose.—20 to 45 grains.

It should not be prescribed with Alkalies, nor be treated with boiling Water.

Preparations.

MISTURA CHLORALAMIDI.—Chloralamide, 4 drms.; Powdered Sugar, 1 oz.; Alcohol (60 p.c.) to make 4½ fl. ounces.

Dose.—3 to 6 fl. drms., to be taken with Water.

CHLOROBROM.—A preparation containing 30 grains of Chloralamide and 30 grains of Potassium Bromide in each ounce. Dose ½ to 1 fl. oz. Has been recommended as a preventive in sea-sickness; also in persistent vomiting not arising from sea-sickness, and in gastric ulcer.—*L.* '92, i. 518; '93, ii. 88, 367, 1564; '94, i. 1001; '95, i. 91. In insomnia and delirium tremens.—*L.* '93, ii. 1486; *L.* '95, i. 1307.

Not Official.

CHLORALOSE.

ANHYDRO-GLUCO-CHLORAL.

A white crystalline powder, melting at 187° C. Soluble in Alcohol, but only slightly so in Water or Ether.

Its boiling aqueous solution does not reduce Ammonio-silver Nitrate.

Medicinal Properties.—Hypnotic and sedative, but dose requires to be watched. Best adapted to cases of simple insomnia. Condemned as a hypnotic for general use as patients rapidly become habituated to the drug, which then ceases to be effective. Found useful in doses of from 4 to 8 grains in cases of epilepsy complicated by insomnia.—*B.M.J.E.* '95, i. 104.

As small a dose as 4 grains has been found to produce alarming intoxication in a tuberculous patient.—*P.J.* (3) xxv. 1139.

In the insomnia and night sweats of phthisis.—*B.M.J.E.* '94, ii. 51; *T.G.* '95, 93; in the insomnia of asylum patients.—*B.M.J.E.* '93, ii. 75, 91; '94, i. 39; ii. 60.

Poisonous effects with large doses.—*F.B.T.* '95, 83; *Iv.* lii., 98; *B.M.J.E.* '94, ii. 52.

Dose.—3 to 10 grains.

Not Official.

CHLORI LIQUOR.

SOLUTION OF CHLORINE.

It is now transferred to the Appendix of B.P., 1898.

A yellowish-green liquid, smelling strongly of Chlorine.

Medicinal Properties.—Deodorizer, antiseptic, and disinfectant. When diluted it is used as a **gargle** in small-pox, scarlatina, diphtheria, and putrid sore throat, and as a **wash** for ulcers, cancerous sores, buboes, and large abscesses. In India it has been given for biliary obstructions in conjunction with the Nitrohydrochloric Acid baths.

Strongly advocated by Burney Yeo in the treatment of enteric fever. The solution he uses is obtained by pouring strong Hydrochloric Acid over Potassium Chlorate, thus: into a 12 oz. bottle put 30 grains powdered Potassium Chlorate and pour on it 1 fl. drm. strong Hydrochloric Acid, cork, shake, and allow gas to generate, then add water little by little till bottle is filled. He says it gives much better results and is more pleasant to take than the Liquor Chlorig of the B.P. '85. To 12 fl. oz. of this solution he adds 24 to 36 grains of Quinine and 1 fl. oz. of Syrup of Orange peel; he gives 1 fl. oz. of this mixture every two, three, or four hours, according to the severity of the case.

Dose.—10 to 20 minims, in a wineglassful of water.

Incompatibles.—Salts of Lead and Silver.

Antidotes.—In case of poisoning by Chlorine Water, the antidotes are White of Egg, Milk, Flour.

Foreign Pharmacopœias.—Official in Austr. and Belg., Aqua Chlorig, .32 p.c. of Chlorine; Hung., Jap. and U.S., .4 p.c.; Ger., Aqua Chlorata (contains .4 p.c. of Gas); Fr., Chlore Dissous, .68 p.c.; Solutio Chlorig, Swed., .32 p.c. and Dutch, .390 p.c.; Russ. and Swiss, Chlorum Solutum .4 to .6 p.c.; Port., Solutio de Chloro; Span., Solucion de Cloro; not in Dan., Ital., Mex., or Norw.

Preparation.

LIQUOR CHLORI (L.H.).—Potassium Chlorate, 30 grains; Hydrochloric Acid, $\frac{1}{2}$ oz.; Water to 1 fl. oz.: mix.

CHLOROFORMUM.

CHLOROFORM.

 CHCl_3 , eq. 118.48.

Chloroform, or Trichloromethane, to which has been added sufficient Absolute Alcohol to produce a liquid having a specific gravity not less than 1.490, and not more than 1.495. Trichloromethane may be prepared by heating a mixture of Chlorinated Lime, slaked Lime, Ethylic Alcohol, and Distilled Water.

The quantity of Alcohol is not now defined except that the product is worked to a sp. gr.

Solubility.—10 in 7 of Alcohol (90 p.c.); in all proportions of Ether and Alcohol; freely in Olive Oil and Oil of Turpentine. In Water at 32° F. 1 in 150, at 60° F. 1 in 185, at 86° F. 1 in 210, at 113° F. 1 in 200, at 130° F. 1 in 192. Will not dissolve in Glycerin.

Chloroform acts on Vulcanite, and dissolves Caoutchouc, Gutta-percha, Mastic, Elemi, Tolu, Benzoin, and Copal. Amber, Sandarach, Lac, and Beeswax are only partially soluble. It also dissolves Iodine, Bromine, most of the organic alkaloids, the fixed and volatile Oils, most Resins and Fats. It dissolves Sulphur and Phosphorus sparingly.

Fehling's Solution is reduced by Chloroform but not by Alcohol.—*Allen*.

Medicinal Properties.—A general anæsthetic. Internally, a sedative, carminative, and antispasmodic. Its chief use is to produce general anæsthesia by **inhalation** during surgical operations, uræmic and puerperal convulsions and in obstetric practice. Should be given with caution in cases of fatty and of dilated heart, in extensive lung diseases and severe anæmia. Internally, useful to relieve flatulent distension of stomach and bowels, and the cough of fibroid phthisis; in delirium tremens and sea-sickness. Externally, with Camphor, relieves toothache and neuralgia. Applied immediately after the sting of a wasp, takes away the pain. A powerful auxiliary to the Liniments of Aconite and Belladonna.

Its vapour and aqueous solution are powerfully antiseptic.

Vinegar after Chloroform inhalation to prevent sickness. *See p. 7.*

Chloroform should not be used as an anæsthetic in a room where Gas is being burned; a mixture of Chloroform vapour and air being decomposed by a flame with the formation of irritating compounds.—*C.D.* '91, ii. 858.

The dosage of Chloroform for inhalation.—*B.M.J.* '98, i. 1057.

Dose.—1 to 5 minims.

Prescribing Notes.—As a rule in 'mixtures' Chloroform is in such small quantities as to dissolve in the Water; in concentrated 'mixtures' Mucilage of Acacia would be required to suspend it; it can be given in 'drops' dissolved in some strongly alcoholic menstruum. It mixes readily with Camphor Liniment, Soap Liniment, Olive Oil, or Oil of Turpentine.

Official Preparations.—Aqua Chloroformi, Linimentum Chloroformi, Spiritus Chloroformi, Tinctura Chloroformi et Morphine Composita.

Not Official.—Liquor Chloroformi Compositus, Tinctura Chloroformi Composita, Chloroformum Camphoratum, Carbon Tetrachloride. A.C.E. Mixture, Vienna Mixture, 'Methylene,' Regnaud's Anæsthetic Mixture.

Antidotes.—In case of overdose of Chloroform, the antidotes are, fresh pure air and artificial respiration (*M.T.* '74, ii. 219), and Amyl Nitrite (*L.* '75, i. 644; *B.M.J.* '97, ii. 352). Hypodermic injection of Strychnine, altogether $\frac{1}{2}$ grain was used in this case in divided doses of $\frac{1}{4}$ grain followed by $\frac{1}{2}$ grain.—*B.M.J.* '97, ii. 1498.

Foreign Pharmacopœias.—Official in Austr. and Jap., sp. gr. 1.485 to 1.500; Belg. sp. gr. 1.491; Fr., sp. gr. 1.500; Dutch and U.S., sp. gr. not below 1.490; Dan., Ger., Hung., Norw. and Russ., sp. gr. 1.485 to 1.489; Ital., sp. gr. 1.493; Swed., sp. gr. 1.485 to 1.493; Mex., Port. and Span., sp. gr. 1.480; Swiss, sp. gr. 1.490.

Description.—A liquid of characteristic odour and pungent sweet taste. Chloroform should be kept cool and in a dark place.

Preservation of Chloroform.—*P.J.* '95, ii. 262; '96, i. 249.

Air and light combined are the most potent factors for inducing decomposition in Chloroform sp. gr. 1.5, which is liable to change; but 640 samples of Chloroform sp. gr. 1.497, representing 20 years' supply, were examined without finding the slightest trace of decomposition in any of them.—*P.J.* '98, ii. 669.

Tests.—Sp. gr. 1.490 to 1.495. It should boil between 140° and 143.6° F. (60° and 62° C.). On allowing 20 c.c. to evaporate from a large piece of filter paper placed on a warm plate, no foreign odour is perceptible at any stage of the evaporation. Water which has been shaken for five minutes with half its volume of Chloroform and separated from the Chloroform should be neutral to Litmus (absence of acid), should not afford any colour with 1 c.c. of Solution of Cadmium Iodide and two drops of Mucilage of Starch (absence of free Chlorine), and should not yield more than a very slight opalescence with four drops of Solution of Silver Nitrate (absence of Chlorides). After shaking Sulphuric Acid with ten times its volume of Chloroform for twenty minutes, and setting aside for fifteen minutes, both the Acid and the Chloroform should be perfectly transparent and nearly colourless. 2 c.c. taken from the layer of Sulphuric Acid and diluted with 5 c.c. of Water should remain transparent and very nearly colourless, and should have a pleasant odour. When this liquid is further diluted with 10 c.c. of Water, and stirred with a glass rod, it should still be transparent and colourless, and the addition of four drops of Solution of Silver Nitrate should not cause more than a slightly diminished transparency. Water which has been shaken with half its volume of Chloroform, previously treated with Sulphuric Acid as described above, should not afford more than a slightly diminished transparency with Solution of Silver Nitrate. (The foregoing four tests indicate absence from the Chloroform of products of its decomposition.) It evaporates without residue (absence of fixed matter).

Preparations.

AQUA CHLOROFORMI. CHLOROFORM WATER. (ALTERED.)

Chloroform, 30 minims; Distilled Water, sufficient to produce 25 fl. oz. Shake them together until the Chloroform is dissolved. = (1 in 400).

This preparation contains half the proportion of Chloroform present in the corresponding preparation of the British Pharmacopœia, 1885.

Dose.—Not given in B.P. $\frac{1}{2}$ to 2 fl. oz.; but ordered in smaller quantities as a flavouring agent.

Foreign Pharmacopœias.—Official in Dan., Norw. and U.S. (1 in 200); not in the others.

LINIMENTUM CHLOROFORMI. LINIMENT OF CHLOROFORM.

Chloroform, 2; Liniment of Camphor, 2: mix. = (1 in 2).

The oil in the Camphor Liniment prevents rapid evaporation of the Chloroform.

Foreign Pharmacopœias.—Official in Fr., Chloroform 1, Almond Oil 9; Span., Chloroform 1, Compound Oil of Stramonium 9; Swiss, Chloroform 3, Olive Oil 3 (all by weight); U.S., Chloroform 3, Soap Liniment 7; not in the others.

SPIRITUS CHLOROFORMI. SPIRIT OF CHLOROFORM. *B.P.Syn.*—

CHLORIC ETHER; SPIRIT OF CHLORIC ETHER. (MODIFIED.)

Chloroform, 1; Alcohol (90 p.c.), a sufficient quantity. To the Chloroform add enough of the Alcohol to make the product measure 20 of the Spirit of Chloroform. = (1 in 20).

Now made with Alcohol (90 p.c.) instead of Rectified Spirit.

Dose.—5 to 20 minims, for repeated administration; for a single administration, 30 to 40 minims.

Frequently prescribed as a sweetening agent, and to cover nauseous flavours.

Foreign Pharmacopœias.—Official in Jap., 1 in 20; U.S., Chloroform 6, Alcohol 94; not in the others.

TINCTURA CHLOROFORMI ET MORPHINÆ COMPOSITA. COMPOUND TINCTURE OF CHLOROFORM AND MORPHINE. (ALTERED.)

Chloroform, $1\frac{1}{2}$ fl. oz.; Morphine Hydrochloride, $87\frac{1}{2}$ grains; Diluted Hydrocyanic Acid, 1 fl. oz.; Tincture of Capsicum, $\frac{1}{2}$ fl. oz.; Tincture of Indian Hemp, 2 fl. oz.; Oil of Peppermint, 14 minims; Glycerin, 5 fl. oz.; Alcohol (90 p.c.) a sufficient quantity. Mix the Chloroform, Tincture of Capsicum, Tincture of Indian Hemp, Oil of Peppermint, and Glycerin, with 9 fl. oz. of the Alcohol, and dissolve the Morphine Hydrochloride in the mixture; add the Diluted Hydrocyanic Acid; then mix with enough of the Alcohol to form 20 fl. oz. of the Compound Tincture.

The metric quantities are 75 c.c., 10 grammes, 50 c.c., 25 c.c., 100 c.c., 1.5 c.c., 250 c.c., to form 1000 c.c.

Dose.—5 to 15 minims.

This preparation contains in a 10-minim dose $\frac{3}{4}$ minim of Chloroform, $\frac{1}{2}$ minim of Diluted Hydrocyanic Acid, and $\frac{1}{17}$ grain of Morphine Hydrochloride—that is, more than four times the proportion of Morphine Hydrochloride present in the corresponding preparation of the British Pharmacopœia of 1885.

The formula for this preparation has been so completely changed that it will probably be a very considerable time before Practitioners become familiar with the new preparation and its results.—*C.D.* '98, i. 639.

The B.P., 1885, preparation was practically the same as *Liquor Chloroformi Compositus* (Squire), except that the former contained four times as much Morphine as the latter. In B.P., 1898, the formula has been completely changed, therefore that of *Liquor Chloroformi Compositus*, omitted in our last edition, is now re-inserted. See p. 213.

Foreign Pharmacopœias.—Hung. has a 'Chlorodyne,' but it differs considerably from the above; not in the others.

Not Official.

LIQUOR CHLOROFORMI COMPOSITUS (Squire).—Chloroform, 4 fl. oz.; Ether, 1 fl. oz.; Alcohol (90 p.c.), 4 fl. oz.; Treacle, 4 fl. oz.; Extract of Liquorice, 2½ oz.; Morphine Hydrochloride, 8 grains; Oil of Peppermint, 16 minims; Syrup, 17½ fl. oz.; Prussic Acid (2 p.c.), 2 fl. oz. Mix the Oil of Peppermint, Alcohol and Prussic Acid together and dissolve the Morphine Hydrochloride in the mixture; add the Chloroform and Ether; dissolve the Extract of Liquorice in the Syrup, add the Treacle, and mix in the other ingredients.

Dose.—5 to 10 minims.

TINCTURA CHLOROFORMI COMPOSITA.—Chloroform, 2; Alcohol (90 p.c.), 8; Compound Tincture of Cardamoms, 10; mix. =(1 in 10.)

This preparation is deleted from B.P., 1898, but as it is used by some prescribers it is given here.

Dose.—10 to 30 minims.

The Chloroform will separate if this Tincture is prescribed in too little Water.

Has been given successfully for the prevention of sea-sickness.

CHLOROFORMUM CAMPHORATUM. (B.P.C.)—Camphor, 2; Chloroform, 1; dissolve.

A remedy for toothache, and topically applied for rheumatism.

CARBON TETRACHLORIDE, sp. gr. 1.590. Has been used to produce anaesthesia; its action is said to be effective and pleasant to the patient.

A.C.E. MIXTURE.—Alcohol (90 p.c.), 1; Chloroform, 2; Ether, 3; mix.

Used as an anaesthetic in place of Chloroform.—*Med. Chir. Trans.* vol. 47, '64, 341; *B.M.J.* '87, ii. 975, 1078, 1185, 1314, 1359.

VIENNA MIXTURE.—Ether 3; Chloroform 1; by weight.—*P.J.* (3) xii. 703.

'**METHYLENE**' (formerly called Methylene Bichloride).—Introduced by B. W. Richardson in November, 1867. It is a limpid dense fluid, sp. gr. varies; when dropped into Water about one-fourth of it is dissolved, the remainder separates like Chloroform at the bottom of the vessel as a perfectly clear and distinct fluid, and the whole has a sweet pleasant odour, without the least smell of Ether.

Recommended as an anaesthetic in place of Chloroform.—*B.M.J.* '88, i. 1211, 1301; '88, ii. 72, 203.

REGNAULD'S ANÆSTHETIC MIXTURE.—Chloroform 4; Methylc Alcohol 1; mix.

Used as an anaesthetic in the place of Chloroform.—*B.M.J.* '83, ii. 106; '84, i. 452.

PENTAL (Trimethylethylene).—A colourless mobile, inflammable liquid. Has been recommended as a general anaesthetic for short operations. Whitla states that several deaths have been attributed to it and that it causes albuminuria.—*M.A.* '95, 40; *L.* '94, i. 1080; '96, i. 45, 710, 950; *T.G.* '93, 34; '94, 555; *B.M.J.E.* '93, ii. 28; *B.M.J.* '96, i. 730.

CHRY SAROBINUM.

CHRY SAROBIN.

A substance obtained from Araroba by extracting with hot Chloroform, evaporating to dryness, and powdering. It consists chiefly of a definite chemical substance also known as Chrysarobin, but contains a varying proportion of Chrysophanic Acid.

Purified Chrysarobin was introduced in medicine incorrectly as **Chrysophanic**

Acid, and it is still known by this name, which, however, only correctly applies to the oxidised product.

Araroba yields from 55 to 80 p.c. (average 71 p.c.) of Chrysarobin.—*P.J.* (3) xxii. 544.

Medicinal Properties.—In form of **unguentum** or **pigmentum**, it has been found efficient in chronic psoriasis, and is a powerful parasiticide in ringworm and other parasitic skin diseases, but as it may cause erythema it requires watching; it should not be allowed to touch the healthy skin. It stains the skin yellow, also the linen. Sometimes given internally for psoriasis, eczema and acne.

Alopecia areata, treated almost exclusively with Chrysarobin sticks—Chrysarobin: 30; Colophony Resin, 5; Yellow Wax, 35; Olive Oil (by weight), 30.—*B.M.J.E.* '95, ii. 103; *P.J.* '96, i. 139.

Chrysophanic Acid is not an efficient substitute for Chrysarobin in the treatment of psoriasis.—*B.J.M.E.* '96, ii. 96.

Official Preparation.—Unguentum Chrysarobin.

Not Official.—Unguentum Acidi Chrysophanici, Pigmentum Chrysarobini, Chrysarobin Plaster Mulls, Anthrarobin.

Foreign Pharmacopœias.—Official in Austr., Araroba Depurata; Dan., Dutch, Ger., Ital., Jap., Norw., Russ., Swiss and U.S., Chrysarobinum, Mex., Crisarobina, the purified product; not in the others.

Description.—A crystalline yellow, tasteless, inodorous powder, entirely soluble in hot Chloroform, almost entirely soluble in hot Alcohol (90 p.c.), partially soluble in Petroleum Spirit, but only slightly soluble in Water.

Tests.—In Solution of Potassium Hydroxide it partially dissolves, and assumes a deep brownish-red colour. Heated with free access of air it melts, giving off yellow fumes, and when incinerated does not leave more than 1 p.c. of ash.

Preparation.

UNGUENTUM CHRYSAROBINI. CHRYSAROBIN OINTMENT.

Chrysarobin, 2; Benzoated Lard, 48. Triturate the Chrysarobin gradually with the Benzoated Lard, previously melted by heat; continue the heat until the Chrysarobin is dissolved; stir until cold.

=(1 in 25).

Foreign Pharmacopœias.—Official in U.S., 1 in 20; not in the others.

Not Official.

UNGUENTUM ACIDI CHRYSOPHANICI (B.S.H.).—Purified Chrysarobin, 120 grains; Lard, 1 oz.: heat together on a water-bath for half an hour, constantly stirring; when set, mix with a pestle and mortar.

PIGMENTUM CHRYSAROBINI.—Chrysarobin 60 grains; Chloroform 10 drm.; pure Gutta Percha 60 grains; dissolve. Painted on with a stiff brush. Acts effectually, and does not stain the linen.—*B.M.J.* '87, ii. 1139.

It has also been suggested to make Chrysarobin into a **paste** with water, apply this to the skin, and cover it with Collodion.—*M.T.* '82, i. 826.

CHRYSAROBIN PLASTER MULLS (Unna).—Contain $\frac{1}{10}$ grain to the square inch; also five times this strength.

ANTHRAROBIN.—A substitute for Chrysarobin. A reduction product from Alizarin. Slightly soluble in Water, but readily in Alcohol (90 p.c.) and solution of Borax. For an ointment it is rubbed with Olive Oil and diluted with Lard.

Its action is similar to Chrysarobin, but it is slower and does not produce the same irritation. The part should be previously washed with Potash Soap, and the alcoholic tincture is preferred to the ointment. The strength of the ointment used is 1 in 10.—*B.M.J.* '88, i. 1234; *L.M.R.* '88, 234, and '89, 243.

CIMICIFUGÆ RHIZOMA.

CIMICIFUGA.

B.P.Syn.—*ACTÆÆ RACEMOSÆ RADIX.*

The dried rhizome and roots of *Cimicifuga racemosa*.

Medicinal Properties.—Bitter stomachic, analgesic, expectorant. Given in neuralgia, myositis, rheumatism, lumbago, and sciatica. Relieves the pain of dysmenorrhœa and pleurodynia.

Official Preparations.—*Extractum Cimicifugæ Liquidum*, and *Tinctura Cimicifugæ*.

Not Official.—*Cimicifugin*.

Foreign Pharmacopœias.—Official in U.S.; not in the others.

Description.—The rhizome is from about two to six inches (five to fifteen centimetres) long, and from half-an-inch to an inch (twelve to twenty-five millimetres) in diameter, hard, nearly cylindrical in shape, and bears the remains of numerous stout ascending branches marked with encircling leaf-scars. The roots are brittle, and usually broken off near the rhizome; they exhibit, in transverse section, from three to five wedge-shape wood-bundles, separated by as many broad medullary rays. Both rhizome and roots are blackened by Test-solution of Ferric Chloride (presence of Tannic Acid). Odour faint: taste bitter and acid.

Preparations.

EXTRACTUM CIMICIFUGÆ LIQUIDUM. LIQUID EXTRACT OF CIMICIFUGA. *B.P.Syn.*—LIQUID EXTRACT OF *ACTÆÆ RACEMOSA*. (MODIFIED.)

Mix 20 of Cimicifuga, in No. 60 powder, with 40 of Alcohol (90 p.c.); set aside in a closed vessel for forty-eight hours; transfer to a percolator; when the fluid ceases to pass, continue the percolation with more Alcohol, until the Cimicifuga is exhausted. Reserve the first 15 of the percolate; evaporate the remainder to the consistence of a soft extract; dissolve this in the reserved portion; add enough of the Alcohol to make 20 of the Liquid Extract. = (1 in 1).

Now made with Alcohol (90 p.c.) in place of Rectified Spirit.

Dose.—5 to 30 minims.

Foreign Pharmacopœias.—Official in U.S.; not in the others.

TINCTURA CIMICIFUGÆ. TINCTURE OF CIMICIFUGA. *B.P.Syn.*—TINCTURE OF *ACTÆÆ RACEMOSA*. (ALTERED.)

Cimicifuga, in No. 40 powder, 2; Alcohol (60 p.c.), a sufficient

quantity. Moisten the powder with 1 of the Alcohol, and complete the percolation process. The resulting Tincture should measure 20.
=(1 in 10).

Now 1 in 10 instead of 1 in 8, and Alcohol (60 p.c.) used in place of Proof Spirit.

Dose.—30 to 60 minims.

The Tincture formerly in the *Companion* as 'Not Official' was twice the strength of this, and is still ordered as **Tinctura Actææ Racemosæ (Squire)** to distinguish it from the Official preparation.

Foreign Pharmacopœias.—Official in U.S., 1 in 5; not in the others.

Not Official.

CIMICIFUGIN.—A brown powder, almost entirely soluble in Alcohol (90 p.c.).

Dose.—1 to 5 grains.

Not Official.

CINCHONÆ CORTEX.

CINCHONA BARK.

The dried bark of *Cinchona Calisaya*, *C. officinalis*, *C. lancifolia*, and other species of *Cinchona*, from which the various alkaloids of the bark may be obtained.

The Peruvian Bark was known in Europe as early as 1640, on account of its having cured the Countess of Chinchon of a fever. We are ignorant of its early history, or how the Spaniards in Peru became acquainted with its virtues; but the Jesuits secretly conveyed it from Peru to Spain—hence it was called the Jesuits' Bark. Little was further known of it until the time of La Condamine, who visited Peru in 1738, and after whom Humboldt and Bonpland named the plant the *Cinchona Condaminea*. It was long supposed that only one species existed; a vast number, however, have been discovered, all of which possess medicinal properties, though varying much, both according to their species and the locality of their growth.

The ash was taken of six samples of Cinchona Bark:—Yellow Bark, 2.01 p. c. and 1.67 p. c.; Pale Bark, 2.95 p. c.; Red Bark, 3.07 p. c. and 2.06 p. c.; *Cinchona nitida*, 2.27 p. c.

The Official salts of Quinine, which are Quininae Hydrochloridum, Quininae Hydrochloridum Acidum, and Quininae Sulphas, may be prepared from the bark of various species of *Cinchona* and *Remijia*.

Only Red Cinchona Bark is Official for the Galenical preparations.

Foreign Pharmacopœias.—Official in Austr., Dan., Ger., Jap. and Russ., any species, especially *Succirubra*; Belg., *China Flava*, *China Fusca*, *China Rubra*; Dutch, *Cinchona Succirubra*; Fr. (*Quinquina*) and Mex., any species; Hung., *China Calisaya* and *Succirubra*; Norw. and Swed., *Cinchona Calisaya*; Port., *Cinchona Flava*, *Fusca* and *Rubra*; Span., *Cinchona Calisaya*, *Peruviana* and *Succirubra*; Swiss and Ital., *Cinchona Succirubra*, *Ledgeriana*, and *Calisaya*; U.S., any species of *Cinchona*, especially *Calisaya Officinalis*, and *Succirubra*; the latter used for Compound Tincture only.

CINCHONÆ RUBRÆ CORTEX.

RED CINCHONA BARK.

The dried bark of the stem and branches of cultivated plants of *Cinchona succirubra*.

Medicinal Properties.—Tonic, bitter stomachic and astringent. It is a valuable remedy in neuralgia and tic douloureux, and in convalescence from acute diseases; in diarrhoea, excessive perspiration, chronic discharges from mucous membranes, and in dipsomania; used as a dusting powder for foul ulcers and moist eczema. (*See also Quinine.*)

An almost white powder was sold in India as the Government Cinchona Febrifuge, which had an average percentage composition of 15.5 crystallisable Quinine, 33.5 Cinchonine, 29 Cinchonidine, 17 Amorphous Alkaloid, 5 colouring matter.

It has been suggested to mix the crystalline salts in the proportion of 4 parts of Sulphate of Quinine, 8 parts of Sulphate of Cinchonidine, 9 parts of Sulphate of Cinchonine.

The results of experiments in India proved that Sulphate of Quinine was quite equal to Sulphate of Quinine in therapeutic value, and Sulphate of Cinchonidine very nearly so; that Sulphate of Cinchonine, while possessing valuable febrifuge properties, was in large doses apt to cause nausea, vomiting, and derangements of the bowels, and was not quite so speedy in its action in arresting periodic fevers as the other alkaloids; that in nine-tenths of the fever cases of India, Cinchonidine is just as efficient as Quinine, and only about one-fourth of the cost.—*Cinchona Committee's Report*, 31 August, 1878.

Official Preparations.—Extractum Cinchonæ Liquidum, Infusum Cinchonæ Acidum, Tinctura Cinchonæ, Tinctura Cinchonæ Composita, and is a source of the Alkaloid Quinine.

Not Official.—Decoctum Cinchonæ, Cinchonidinæ Sulphas and Cinchoninæ Sulphas.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Norw., Port., Russ., Span., Swed., Swiss, and U.S.

Description.—Imported in quilled or more or less incurved pieces, coated with the periderm, and varying in length from two inches to a foot (five to thirty centimetres) or more—the bark itself from about one-tenth to a quarter of an inch (two and a half to six millimetres) thick, or rarely more; outer surface brownish or reddish-brown in colour, more or less rough from longitudinal ridges which are most apparent in the branch bark, with numerous warts often running into lines in the larger pieces; in some varieties marked with numerous transverse cracks which have not thickened edges; inner surface brick-red or deep reddish-brown, irregularly and coarsely striated; fracture shortly fibrous in the smaller and finely fibrous in the larger pieces; powder brownish or reddish-brown; no marked odour; taste bitter and somewhat astringent.

Umney points out (*P.J.* (3) xvi. 407) that a bark may contain the requisite total alkaloid and the Official percentage of Quinine and Cinchonidine, and still contain only a trace of Quinine. What therefore is really wanted in the Pharmacopœia is a *Quinine-standard* for the bark.

Tests.—When used for purposes other than that of obtaining the alkaloids or their salts, it should yield between 5 and 6 p.c. of total alkaloids, of which not less than half should consist of Quinine and Cinchonidine, as estimated by the following methods:—

Mix 20 grammes of Red Cinchona Bark, in No. 60 powder, with 6 grammes of Calcium Hydroxide; slightly moisten the powders with

20 c.c. of Water; mix the whole intimately in a small porcelain dish or mortar; allow the mixture to stand for an hour or two, when it will present the characters of a moist dark-brown powder, in which there should be no lumps or visible white particles. Transfer this powder to a suitable flask fitted with a small reflux condenser, add 130 c.c. of Benzolated Amylic Alcohol, boil them together for about half an hour, decant the liquid on to a filter, leaving the powder in the flask; add more of the Benzolated Amylic Alcohol to the powder, and boil and decant as before; repeat this operation a third time; then turn the contents of the flask on to the filter, and wash by percolation with more of the Benzolated Amylic Alcohol until the Bark is exhausted. Introduce the collected filtrate, while still warm, into a stoppered glass separator; add to it 2 c.c. of Diluted Hydrochloric Acid, mixed with 12 c.c. of Water; shake them well together, and when the acid liquid has separated this may be drawn off, and the process repeated with Water slightly acidulated with Hydrochloric Acid, until the whole of the alkaloids have been removed. The liquid should then, while warm, be carefully and exactly neutralised with Solution of Ammonia, and concentrated to the bulk of 16 c.c. If now about 1.5 grammes of Sodium Potassium Tartrate, dissolved in twice its weight of Water, be added to the solution, and the mixture stirred with a glass rod, insoluble Tartrates of Quinine and Cinchonidine will separate completely in about an hour, and these collected on a filter, washed, and dried in a water-oven, will contain eight-tenths of their weight of the alkaloids, Quinine and Cinchonidine, which, multiplied by 5, gives the weight of those alkaloids present in 100 grammes of the bark. To the mother-liquor from the preceding process add Solution of Ammonia in slight excess. Collect, wash, and dry the precipitate, which will contain the other alkaloids. The weight of this precipitate, multiplied by 5, and added to the percentage weight of the Quinine and Cinchonidine, gives the percentage weight of total alkaloids.

Preparations.

EXTRACTUM CINCHONÆ LIQUIDUM. LIQUID EXTRACT OF CINCHONA. (MODIFIED).

A Liquid Extract containing 5 grains of the alkaloids of Red Cinchona Bark in 110 minims.

Red Cinchona Bark, in No. 60 powder, 20 oz.; Hydrochloric Acid, 5 fl. drm.; Glycerin, 2½ fl. oz.; Alcohol (90 p.c.) and Distilled Water of each a sufficient quantity. Mix the Red Cinchona Bark with 5 pints of the Distilled Water to which the Hydrochloric Acid and Glycerin have been added; set aside in a covered vessel for forty-eight hours, stirring frequently; transfer to a percolator; when the liquid ceases to pass, and the contents of the percolator have been properly packed, continue the percolation with Distilled Water until 15 pints of liquid have passed, or until that which is passing has ceased to give a precipitate on the addition to it of an excess of Solution of Potassium Hydroxide. Evaporate the percolate in a porcelain or enamelled iron vessel at a temperature not exceeding 180° F. (82.2° C.) until it is reduced to 20 fluid ounces of Liquid.

Determine the proportion of alkaloids in the liquid product by the following analytical process:—

Put 5 c.c. of the liquid, together with 25 c.c. of Water, into a stoppered glass separator; add 30 c.c. of Benzolated Amylic Alcohol and 15 c.c. of Solution of Potassium Hydroxide; shake them together thoroughly and repeatedly; allow them to remain at rest until the spirituous solution of the alkaloids shall have separated and formed a distinct stratum over the dark-coloured alkaline liquid. Run off the latter by the stopcock into another separator; agitate it thoroughly with 30 c.c. of Benzolated Amylic Alcohol; allow the liquids to separate; draw off and reject the lower layer; add the Alcoholic layer to the liquid in the first separator; wash the mixture with a little Water; agitate thoroughly with 30 c.c. of a warm mixture of 1 volume of Diluted Hydrochloric Acid and 5 volumes of Water; allow the liquids to separate; draw off the lower acid layer into another separator; agitate the Alcoholic layer with a second quantity of 30 c.c. of the mixture of Water and Diluted Hydrochloric Acid; when separated draw this off into the other portion of acid liquid; to the mixture add 10 c.c. of Chloroform and sufficient Solution of Ammonia to impart a strongly alkaline reaction; shake thoroughly; allow the liquids to separate; draw off the lower Chloroformic layer into a weighed dish; repeat the agitation and separation with two successive quantities of 10 c.c. of Chloroform, and add the Chloroformic liquids to that in the dish. Allow the Chloroform to evaporate slowly; dry the residue in the dish at a temperature of about 230° F. (110° C.). The weight of the dish and its contents, after deducting the known weight of the dish, will give that of the alkaloids.

Having thus ascertained the alkaloidal strength of the 20 fl. oz. of liquid product, every volume of it containing 5 grammes of total alkaloids is first to be brought to 85 c.c. either by evaporation, or, if necessary by dilution with Distilled Water, then a volume of 12.5 c.c. of the Alcohol is to be added, and the final adjustment of the volume to 100 c.c. is to be effected by the addition of Distilled Water. The finished liquid extract will thus contain five grammes of the alkaloids of the bark in every 100 c.c., or 5 grains in 110 minims.

Now made with Alcohol (90 p.c.) in place of Rectified Spirit.

Dose.—5 to 15 minims.

Foreign Pharmacopœias.—Official in Dan., Dutch, Jap., Mex., Norw., Swiss and U.S., 1 in 1; Solid Extracts.—Austr. and Hung., Aqueous; Dutch, Mex., Span. and Swiss, Alcoholic; Belg., Ger., Ital., Mex., Port. and Russ., both Aqueous and Alcoholic; not in the others.

Ext. Cinch. Fluid. U.S. (Red Bark) is sometimes prescribed, it means the substitution of Red for the other species used in that formula.

INFUSUM CINCHONÆ ACIDUM. ACID INFUSION OF CINCHONA.

Red Cinchona Bark, in No. 40 powder, 1; Aromatic Sulphuric Acid, $\frac{1}{4}$; Distilled Water, boiling, 20: mix the Red Cinchona Bark with the Distilled Water in a covered vessel; add the Aromatic Sulphuric Acid; infuse for one hour, and strain. = (1 in 20).

Dose.— $\frac{1}{2}$ to 1 fl. oz.

Foreign Pharmacopœias.—Official in U.S. (C. any species not Red), 6 in 100, with Aromatic Sulphuric Acid; Russ. (C. Rubra), 1 in 8, with Phosphoric Acid; Fr. (Tisane), 1 in 50; Span., 1 in 46, without acid; not in the others.

TINCTURA CINCHONÆ. TINCTURE OF CINCHONA. (ALTERED.)

Red Cinchona Bark, in No. 40 powder, 4; Alcohol (70 p.c.) a sufficient quantity. Moisten the powdered Bark with 4 of the Alcohol; set aside for twenty-four hours in a closed vessel; percolate with more of the Alcohol, until 14 of percolate have been collected; press the marc; add the expressed liquid to the percolate; set aside for twenty-four hours; filter.

Take 10 c.c. of the resulting strong Tincture and determine its proportion of alkaloids by the assay process given under 'Extractum Cinchonæ Liquidum.'

Add to the bulk of the strong Tincture such a quantity of the Alcohol that 100 c.c. of the resulting Tincture shall contain 1 gramme of alkaloids.

Alcohol (70 p.c.) is now used in place of Proof Spirit, and the preparation is standardised.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Official in Belg., Tinctura Chinæ, Tinct. Chinæ Flavæ, Tinct. Chinæ Rubræ; Dutch Tinctura Chinæ Rubræ; Fr., Teinture de Quinquina Gris, Jaune, also Rouge; Dan., Ger. and Russ., Tinctura Chinæ (from any species); Hung. Tinctura Chinæ Simplex (from C. Succirubra); Ital., Tinctura di China; Jap., Tinct. Chinæ; Mex., Tintura de Quina; Norw. and Swed., Tinct. Chinæ (from C. Calisaya); Port., Tintura de Quina (from C. Flava); Span., Tintura Alcoholic de Quina (from C. Calisaya and C. Loja); Swiss, Tinctura Cinchonæ; U.S., Tinctura Cinchona (C. any species not Red); all 1 in 5, and all by weight, except U.S.; not in Austr.

Test.—10 c.c., when treated by the assay process described under 'Extractum Cinchonæ Liquidum,' should yield an amount of alkaloids representing not less than .95 gramme nor more than 1.05 grammes, in 100 c.c. of the Tincture.

TINCTURA CINCHONÆ COMPOSITA. COMPOUND TINCTURE OF CINCHONA. (ALTERED.)

Tincture of Cinchona, 20 fl. oz.; Dried Bitter-Orange Peel, well-bruised, 2 oz.; Serpentry Rhizome, in No. 40 powder, 1 oz.; Cochineal, in powder, 56 grains; Saffron, 110 grains; Alcohol (70 p.c.) a sufficient quantity. Mix the solid ingredients with 20 fl. oz. of the Alcohol; set aside in a closed vessel for seven days, agitating frequently; strain; press the marc; mix the liquids; add the Tincture of Cinchona, and enough of the Alcohol to produce 40 fl. oz. of the Compound Tincture; set aside for twenty-four hours; filter.

Now made with Tincture of Cinchona instead of Red Cinchona Bark. Alcohol (70 p.c.) used in place of Proof Spirit, and the preparation standardised.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Official in Span., resembles Brit., but made with Loxa Bark; Austr., Ger., Hung., and Russ., Tinct. Chinæ Comp., also Belg. (Tinct. Whyttii), and Swiss (Tinct. Cinch. Co.), with Cinchona, Gentian, Orange Peel, and

Cinnamon (various strengths); Dan., Dutch, Norw., and Swed. (Tinct. Chinae Comp.), similar to the above but without Cinnamon; Mex., (Tintura de Quina Compuesta), Bitter Orange Peel, Cinchona and Gentian; Port. (Tinct. de Quina Comp.), Cinchona, Orange Peel, and Serpentry; U.S., almost the same with Glycerin; not in Fr. and Jap.

Tests.—10 c.c., when treated by the assay process described under 'Extractum Cinchonæ Liquidum,' should yield not less than .045 gramme nor more than .055 gramme of alkaloids. 2 c.c. of the Compound Tincture after evaporation should leave a residue which imparts a yellow colour to Chloroform.

HUXHAM'S TINCTURE OF BARK (Original Formula in 1788).—Powdered Peruvian Bark, 4 oz.; Orange Peel, 3 oz.; Serpentry Root, 80 grains; Saffron, 160 grains; Cochineal, 80 grains; Brandy, 40 fl. oz.; digest 3 or 4 days.

Not Official.

DECOCTUM CINCHONÆ.—Red Cinchona Bark, in No. 20 powder, 1½; Distilled Water, 20; boil ten minutes; when cold, strain, and pour on the marc sufficient Water to make 20. = (1 in 16).

Dose.—1 to 2 fl. oz.

Foreign Pharmacopœias.—Official in Belg., China Fusca, 1 in 10, also Flava and Rubra 1 in 10; Dan., 1 in 8 with Hydrochloric Acid; Dutch, 6 in 100; Norw., China Calisaya 1 in 10 with Hydrochloric Acid; Port., Cinchona Flava 1 in 10, also Fusca 1 in 10; Russ., Cinchona Rubra, 1 in 7.5, containing Sulphuric Acid; Span., Quina Calisaya 1 in 46, also Quina ex Loja 1 in 46; not in the others.

CINCHONIDINÆ SULPHAS (C₁₅H₂₂N₂O)₂.H₂SO₄. xH₂O. — Colourless silky crystals.

Solubility.—1 in 150 of Water, 1 in 60 of Alcohol (90 p.c.), sparingly in Chloroform and Ether.

Dose.—1 to 10 grains.

Foreign Pharmacopœias.—Official in Fr., and U.S., not in the others.

CINCHONINÆ SULPHAS, (C₁₉H₂₂N₂O)₂.H₂SO₄. 2H₂O. — Colourless prismatic crystals.

Solubility.—1 in 70 of Water, 1 in 9 of Alcohol (90 p.c.), 1 in 60 of Chloroform, sparingly in Ether.

Dose.—1 to 10 grains.

Foreign Pharmacopœias.—Official in Dutch, Fr., Mex., Port., Span., Swed. and U.S., not in the others.

Alleged conversion of Cinchonine into Cinchonidine.—*J.C.S. Abs.* '96, i. 707; *P.J.* '97, i. 141.

CINNAMOMI CORTEX.

CINNAMON BARK.

The dried inner bark of shoots from the truncated stocks of *Cinnamomum Zeylanicum*. Obtained from cultivated trees. Imported from Ceylon, and distinguished in commerce as Ceylon Cinnamon.

Medicinal Properties.—Carminative, astringent, aromatic stimulant, and antiseptic, chiefly used as an adjuvant to other medicines. Often employed with Chalk in diarrhœa.

60 grain doses for dysentery.—*B.M.J.* '95, i. 530; *L.* '95, i. 567. Has been lauded for cancer, but the majority of evidence is not in its favour.—*M.A.* '95, 163.

Inhalation of **Oil of Cinnamon** in the treatment of consumption.—*B.M.J.* '96, ii. 1374.

Dose.—Not given in B.P.; 10 to 20 grains in powder.

Official Preparations.—Of the **Bark**, Aqua Cinnamomi, Oleum Cinnamomi, Pulvis Cinnamomi Compositus, and Tinctura Cinnamomi; used in the preparation of Decoctum Hæmatoxyli, Pulvis Catechu Compositus, Pulvis Crete Aromaticus, Pulvis Kino Compositus, Tinctura Cardamomi Composita, Tinctura Catechu, and Tinctura Lavandule Composita. Of the **Water**, Mistura Crete, Mistura Guaiaci, Mistura Olei Ricini, Mistura Spiritus Vini Gallici, Syrupus Aromaticus and Syrupus Cascarie Aromaticus. Of the **Oil**, Spiritus Cinnamomi. Of the **Compound Powder**, Pilula Aloes et Ferri and Pilula Cambogiae Composita. Of the **Spirit**, Acidum Sulphuricum Aromaticum.

Foreign Pharmacopœias.—Official in Belg., Fr. (Cannelle), Ital. (Cannella), Jap., Mex. (Canela), Norw., Port. (Canella), and Swed. use Ceylon Cinnamon only. Austr., Ger., Hung. and Russ., use Chinese Cinnamon or Cassia only. Dan., Dutch, Span., Swiss and U.S. use both kinds.

Description.—In closely rolled quills, each about three-eighths of an inch (nine millimetres) in diameter, and containing numerous smaller quills or channelled pieces. It is thin, brittle, splintery, dull light yellowish-brown externally, and marked by little scars or holes and faint shining wavy lines; darker brown on its inner surface. Odour fragrant; taste warm, sweet, and aromatic.

With a decoction (1 in 10) a dark bluish-grey colour is produced by Tincture of Iodine, which at first disappears on shaking, owing to absorption of the Iodine by the Essential Oil, but is permanent with excess of the reagent. Cassia contains much more Starch, and gives a strong blue reaction with excess of Iodine. The absorption is much less with Cassia than with Cinnamon.

The ash was determined of Cortex and Pulvis Cinnamomi: Cortex (3 samples) 4.26, 4.02, 3.43 p.c.; Pulvis (4 samples) 4.61, 4.8, 5.07, 4.44 p.c.

A mixture of Cassia buds in powdered Cinnamon.—*P.J.* (3) xxv. 646.

Examination of powdered Cinnamon for walnut shells, by determining Volatile Oil, Alcoholic Extract, insoluble Ash, and Nitrogen.—*Analyst*, '95, 130; *C.D.* '95, i. 867.

Preparations.

AQUA CINNAMOMI. CINNAMON WATER. (MODIFIED.)

Cinnamon Bark, bruised, 1; Water, 20: distil 10. = (1 in 10).

The strength is now 1 in 10 in place of 1 in 8.

The distilled 'Aqua' is very turbid from suspended Oil. There is no recognised rule in dispensing as to whether it should be filtered or not, but it is customary to do so.

Dose.—Not given in B.P.; 1 to 2 fl. oz.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Ger., Russ., Swed. and Swiss, 1 in 10; Fr. (Eau de Cannelle), and Ital. (Acqua dist. di Cannella), Mex. (Agua destilada de Canela), 1 in 4; Hung., 1 in 5; Port., 1 in 8; Jap., Norw. and U.S., made with Oil 1 in 500.

OLEUM CINNAMOMI. OIL OF CINNAMON.

The Oil distilled from Cinnamon Bark.

Solubility.—10 in 3 of Alcohol (90 p.c.); 1 in 45 of Alcohol (60 p.c.).

Possesses the aromatic and antiseptic properties of Cinnamon Bark without its astringency.

Dose.— $\frac{1}{4}$ to 3 minims.

In pill or on Sugar.

Foreign Pharmacopœias.—Official in Belg., Dutch, Fr. (Huile Volatile de Cannelle), Ital., Jap., Mex. (Aceite Volatil de Canela); Port. and Span. use Oil of Cinnamon; Austr., Dan., Ger., Hung., Norw., Russ., Swed., Swiss and U.S. use Oil of Cassia.

Description.—Yellow when freshly distilled, but gradually becoming reddish; having the odour and taste of the Bark.

It is almost identical in composition with Oil of Cassia, both of which consist mainly of **Cinnamic Aldehyde**; the difference in flavour being due to the presence of small quantities of other bodies, chief of which are Eugenol in Cinnamon Oil and Cinnamyl Acetate in Oil of Cassia. Cinnamon Oil mixed with three or four times its volume of a saturated solution of Potassium Bisulphite sets to a crystalline mass.

Tests.—Sp. gr. 1.025—1.035. 1 c.c. dissolved in 5 c.c. of Alcohol (90 p.c.), and Test-solution of Ferric Chloride added, should afford a pale green, but not a decided blue colouration (absence of Cinnamon-leaf Oil). If 10 c.c. be well shaken with 50 c.c. of a boiling 30 p.c. solution of Sodium Hydrogen Sulphite, an oily layer separates, which, when cooled to 60° F. (15.5° C.), should not measure more than 5 c.c. (absence of more than 50 p.c. of constituents other than Aldehydes.)

This test is for the determination of Cinnamic Aldehyde, but it is equally applicable to Oil of Cassia, which likewise consists mainly of that substance.

The odour and sp. gr. of these two oils are somewhat different and there is a marked contrast in the price, but no reliable method for determining an admixture of the two oils appears to have been published.

The brown colour produced by Ferric Chloride with Oil of Cassia is so much darker than the tint afforded with Oil of Cinnamon, that an admixture of 1 part of Oil of Cassia with 2 parts of Oil of Cinnamon can be readily detected by that test.

Schimmel states that a genuine oil from Cinnamon Bark sometimes reaches sp. gr. 1.038.—*P.J.* '95, ii. 329.

PULVIS CINNAMOMI COMPOSITUS. COMPOUND POWDER OF CINNAMON. *B.P.Syn.*—PULVIS AROMATICUS.

Cinnamon bark, 1; Cardamom seeds, 1; Ginger, 1, all in powder: mix. = (1 in 3).

Dose.—10 to 40 grains.

Foreign Pharmacopœias.—Official in Port. (Pó de Canella Comp.), Cinnamon 7, Cardamoms 7, Ginger 6; Pulvis Aromaticus—Belg., Dutch, Jap. and Swiss, same as Brit.; Swed., Cinnamon 2, Cardamoms 1, Ginger 1; U.S., Cinnamon 7, Ginger 7, Cardamoms 3, Nutmeg 3; Russ., Cinnamon 4, Cloves, Mace, Nutmeg, Ginger, of each 1; not in the others.

SPIRITUS CINNAMOMI. SPIRIT OF CINNAMON. (ALTERED.)

Oil of Cinnamon, 1; Alcohol (90 p.c.), a sufficient quantity. To the Oil of Cinnamon add enough of the Alcohol to form 10 of the Spirit of Cinnamon. = (1 in 10).

Now 1 in 10 in place of 1 in 50, and Alcohol (90 p.c.) used instead of Rectified Spirit.

Dose.—5 to 20 minims.

This Spirit of Cinnamon contains five times the proportion of Oil of Cinnamon present in the Spirit of Cinnamon of the B.P. '85.

Foreign Pharmacopœias.—Official in Belg., 1 in 100; Jap., 1 in 50; U.S., 1 in 10; Dutch, Ital., Mex., Port. and Span. (distilled from the bark); not in the others.

TINCTURA CINNAMOMI. TINCTURE OF CINNAMON. (ALTERED.)

Cinnamon bark, in No. 40 powder, 1; Alcohol (70 p.c.), a sufficient quantity. Moisten the powder with 1 of the Alcohol, and complete the percolation process. The resulting Tincture should measure 5.

=(1 in 5).

Now 1 in 5 instead of 1 in 8, and Alcohol (90 p.c.) used in place of Rectified Spirit.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Jap., Mex., Norw., Port., Russ., Span., Swed., and Swiss, 1 in 5; all by weight; U.S., 1 in 10.

COCÆ FOLIA.

COCA LEAVES.

The dried leaves of *Erythroxylum Coca*, and its varieties.

Commercially the leaves show two main varieties, the Peruvian or Truxillo and the Bolivian or Huanuco. A third variety from Java and other East Indian countries is used to a considerable extent in Germany.

It would appear from investigations on the subject of Coca Leaves and Coca Alkaloids: 1. That the original broad-leaved Bolivian (Huanuco) Coca contains principally Cocaine; 2. That the alkaloid of N. Peruvian or Truxillo Coca is only about one-half Cocaine, a large proportion of the remainder being Cinnamyl-Cocaine; 3. That frequently in Truxillo Coca, and particularly in East Indian (Java), there is another alkaloid around which the controversy still turns. It is called Cocamine by Hesse, and is said to be similar in action to Cocaine, but weaker. Liebermann, however, holds that this Cocamine is the body first called by him Isotropyl-Cocaine and later α -Truxilline, and to which he ascribes dangerously toxic properties.

As this latter compound interferes with the crystallisation of the Cocaine, and Cinnamyl-Cocaine is readily detected by the Permanganate test, neither of these impurities is likely to be found in a well-crystallised commercial sample.

Medicinal Properties.—A nervine and muscular tonic, stimulant and restorative. Useful during convalescence, in debility and nervous exhaustion, and the opium and alcohol habits. It is chewed by the natives of Peru and Bolivia to sustain them during the day, that they may defer eating till the evening.

Official Preparation.—Extractum Cocæ Liquidum. Used in the preparation of Cocaina and Cocainæ Hydrochloridum.

Not Official.—Extractum Cocæ, and Vinum Cocæ.

Foreign Pharmacopœias.—Austr. and Belg., Folia Coca; Fr., Port. and U.S., Coca; Mex. and Span., Coca del Peru; Swiss, Folium Cocæ; not in the others.

Description.—The leaves imported from Bolivia vary usually from one and a-half to three inches (three and a-half to seven centimetres) in length, and from one to one and a-half inches (twenty-five to thirty-five millimetres) in breadth. They are brownish-green in colour, oval, entire and glabrous, the upper surface bearing a distinct ridge above the midrib. On the under surface near to the midrib and on either side of it a curved line is almost always distinctly visible. The midrib itself is prolonged into a minute horny apiculus, which, however, is frequently broken off. Most of the epidermal cells of the under surface are seen in transverse section to project in the form of small papillæ. The leaves possess a faint but characteristic odour and a slightly bitter taste, which is succeeded by a sensation of numbness. They should be free from mildew.

The leaves imported from Peru are somewhat smaller, narrower, and more fragile than those imported from Bolivia; they are pale green in colour, and do not exhibit a prominent ridge above the midrib on the upper surface, nor such distinct curved lines on either side of it on the under surface.

Coca leaves contain an amount of alkaloids varying from 0 to 1.5 p.c. The average amount is about .5 p.c. The leaves frequently contain very little alkaloid owing to the alkaloids readily undergoing decomposition when the leaves are exposed to heat and moisture. The amount of Cocaine in a good sample of leaves is about 70 p.c. or even less of the total alkaloids.

A comparison of different processes of assay of Coca leaf and the fluid extract.—*A.J.P.* '95, 572.

Preparation.

EXTRACTUM COCÆ LIQUIDUM. LIQUID EXTRACT OF COCA.

Mix 20 of Coca Leaves, in No. 20 powder, with 40 of Alcohol (60 p.c.); set aside in a closed vessel for forty-eight hours; transfer to a percolator; when the fluid ceases to pass, continue the percolation with more of the Alcohol until the Coca Leaves are exhausted. Reserve the first 15 of the percolate; evaporate the remainder, at a temperature below 176° F. (80° C.), to the consistence of a soft extract, dissolve this in the reserved portion; add enough of the Alcohol to produce 20 of the Liquid Extract. = (1 in 1.)

NOTE.—As the Coca leaves would be but imperfectly exhausted by the first 15 parts of the Alcohol, and as the active constituents are greatly damaged or destroyed by heat, a fluid extract prepared by re-percolation is much to be preferred. When thus prepared from carefully dried green leaves, it contains 25 p.c. of solid Extract (dried at 212° F.).

Alcohol (60 p.c.) now used in place of Proof Spirit.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Official in U.S., same as Brit.; Mex.; not in the others.

Belg. has solid Extract; French Codex has solid Extract, Tincture 1 in 5, Tisane 1 in 100; Swiss has Tincture 1 in 5.

A 'miscible' liquid extract of Coca, for adding to wine, made by percolating the leaves with a weak Alcohol and subsequent addition of Glycerin.—*P.J.* (3) xxv. 1169; *P.J.* '96, i. 306.

Not Official.

EXTRACTUM COCÆ.—A solid alcoholic extract, of a green colour, prepared from carefully dried leaves.

Dose.—2 to 10 grains.

VINUM COCÆ. *Syn.*—VIN DE COCA, Fr.—Dried leaves of Coca 6, Vin de Grenache or Vin Rouge 100: macerate for 6 days and filter.

Wine of Coca can also be made by adding an equivalent quantity of Liquid Extract to Wine.

Foreign Pharmacopœias.—Official in Belg. and Fr., 6 in 100; Mex., 3 in 100; Span., 1 in 30; Swiss, 1 in 20; not in the others.

COCAINA.

COCAINE.

$C_{17}H_{21}NO_4$, eq. 300·93.

An alkaloid, obtained from the leaves of *Erythroxylum Coca*, and its varieties.

Solubility.—About 1 in 1300 of Water (Paul); 1 in 10 of Alcohol (90 p.c.); 1 in 12 of Olive Oil; 1 in 4 of Oleic Acid; 2 in 1 of Chloroform; 1 in 4 of Ether; 1 in 14 of Oil of Turpentine. Insoluble in Glycerin.

Foreign Pharmacopœias.—Official in Fr., and Mex.; not in the others.

Description.—Colourless monoclinic prisms which have a bitter taste followed by a sensation of tingling and numbness.

Tests.—It melts at 204·8° to 208·4° F. (96° to 98° C.) Its solution in Water acidulated with Hydrochloric Acid, and the dry Salt obtained on evaporating this solution, afford the reactions mentioned under 'Cocainæ Hydrochloridum.' Its solution in Water acidulated with Nitric Acid yields no reaction with the tests for Chlorides or Sulphates.

Pure Cocaine melts at 98° C.

Preparation.

UNGUENTUM COCAINÆ. COCAINE OINTMENT. (New.)

Cocaine, 1; Oleic Acid (by weight), 4; Lard, 20. Rub the Cocaine with the Oleic Acid, and gently warm the mixture until dissolved; add the Lard; mix. = (1 in 25).

COCAINÆ HYDROCHLORIDUM.

COCAINE HYDROCHLORIDE.

HYDROCHLORATE OF COCAINE.—B.P. '85.

$C_{17}H_{21}NO_4, HCl$, eq. 337·12.

The Hydrochloride of an alkaloid obtained from the leaves of *Erythroxylum Coca*, and its varieties.

Solubility.—2 in 1 of Water; 1 in 2½ of Alcohol (90 p.c.); 1 in 2½ of Glycerin; about 1 in 20 of Chloroform; almost insoluble in Ether; insoluble in Fixed Oils.

Medicinal Properties.—Local anæsthetic, mydriatic. Has been largely used for producing local anæsthesia in examinations of and operations on the eye and throat; and in dentistry ($\frac{1}{4}$ to $\frac{1}{2}$ grain being injected into the gum); 2 to 4 p.c. **solutions** being used for the eye and 20 p.c. for the throat. It has also been used in producing anæsthesia of other mucous membranes, as the urethra, vagina, nose and rectum. It has been used successfully as a preventive of sea-sickness, in doses of $\frac{1}{4}$ to 1 grain in solution, and in doses of $\frac{1}{2}$ grain every half-hour in the vomiting of pregnancy. The local applications are assisted by subcutaneous injection in producing anæsthesia of the deeper seated tissues for minor operations and for neuralgia; injected locally for sciatica; a 10 p.c. solution applied on lint to a rigid os uteri is followed by rapid dilatation, *B.M.J.* '98, ii. 1374. Unless a preservative be used, solutions should be freshly prepared to avoid the formation of a fungus which has been found in stale solutions, and to which have been attributed injurious effects such as sudden fainting and collapse. As an ointment it is used in painful skin diseases as shingles; in facial neuralgia and in pruritus.

In pertussis, dose $\frac{1}{4}$ grain three times daily for infants, increasing it according to the age, $\frac{1}{2}$ grain being given to children of 5 or 6 years.—*P.J.* '95, ii. 27; *L.* '95, i. 1429; *B.M.J.E.* '95, ii. 28.

Combined with Opium in the treatment of cancerous disease.—*B.M.J.* '96, ii. 718.

In operations for piles, *B.M.J.* '85, i. 227; '86, ii. 586; *L.* '86, i. 527; and for fistula, *L.* '87, ii. 793; in prostatic disease, *B.M.J.* '86, i. 822, 999; in parturition, *B.M.J.* '85, ii. 473; *L.* '86, i. 1148; for relief of pain in passing catheter, *B.M.J.* '86, ii. 413; in lithotripsy, *B.M.J.* '87, i. 589; '88, i. 972; for scalds, burns, and blisters, *B.M.J.* '85, i. 300; *T.G.* '88, 360; in hay fever, *L.* '85, i. 1021; *B.M.J.* '86, ii. 18; '87, i. 1256; in morphinism, *B.M.J.* '85, ii. 1112; in diabetes, *L.* '89, ii. 735. It is also useful in alcoholism. As an antigalactagogue, *T.G.* '95, 119. Toxic effects, *L.* '86, i. 658; '95, ii. 1104; '98, i. 718; *B.M.J.* '85, ii. 971, 983, 1060; '87, i. 617; '88, i. 151, 757; *P.J.* (3) xxv. 1185.

Four cases in which toxic symptoms have followed anæsthesia of the throat.—*B.M.J.E.* '96, ii. 95.

Dose.— $\frac{1}{4}$ to $\frac{1}{2}$ grain.

Hypodermic solutions are used, containing 4 to 10 p.c. of the salt.

For **external application** in neuralgia, 10 or 20 p.c. solution of the *alkaloid* in Oil of Cloves.

Official Preparations.—Lamellæ Cocainæ, and Injectio Cocainæ Hypodermica. Used in the preparation of Trochiscus Kramerie et Cocainæ.

Not Official.—Pastillus Cocainæ, Trochisci Cocainæ, Guttæ Cocainæ Hydrochloratis, Eucaine (A and B), Eucaine Hydrochloride (A and B), Orthoform, Orthoform Hydrochloride, Benzoyl-pseudotropine, Holocaine and Holocaine Hydrochloride.

Antidote.—Inhalation of Nitrite of Amyl.—*B.M.J.* '87, i. 625, 695, 1401; '88, i. 757. Strychnine and Digitalin.—*L.* '98, i. 718.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex., Norw., Russ. and U.S.; not in the others.

Description.—In colourless acicular crystals or crystalline pow-

der. Soluble in four times its weight of Alcohol (90 p.c.) or of Glycerin.

Tests.—It melts at 356° to 366·8° F. (180° to 186° C.). Soluble in half its weight of cold Water, forming a clear and colourless solution, neutral to Litmus. Its aqueous solution has a bitter taste, produces on the tongue a tingling sensation followed by numbness, and when applied to the eye dilates the pupil. It affords a yellow precipitate with Solution of Auric Chloride; a white precipitate with Solution of Ammonium Carbonate, and also with solution of Borax. It dissolves without colour in cold Sulphuric or Nitric Acid, but chars with hot Sulphuric Acid, evolving an agreeable odour, and yielding a crystalline sublimate of Benzoic Acid. Its aqueous solution yields with Solution of Potassium Hydroxide a white precipitate soluble in Alcohol or Ether, with Solution of Picric Acid a yellow precipitate becoming crystalline on standing, with Test-solution of Mercuric Chloride slightly acidulated with Hydrochloric Acid, a white precipitate soluble in hot Water. Moistened with Nitric Acid, the mixture evaporated to dryness, and a drop of Alcoholic Solution of Potassium Hydroxide added, a characteristic odour is evolved more or less recalling that of Peppermint. A solution containing not less than 1 p.c. gives with excess of Solution of Potassium Permanganate a copious red precipitate which does not change colour within an hour (absence of Cinnamyl Cocaine and Cocamine or other products derived from Cocaine). ·1 gramme dissolved in 100 c.c. of Water and ·25 c.c. of Solution of Ammonia added, affords a clear solution, from which a crystalline deposit should gradually separate on stirring (limit of amorphous alkaloid). It affords the reactions characteristic of Hydrochlorides. It should not afford more than the slightest reactions with the tests for Sulphates. Dried for twenty minutes at 204° to 212° F. (95·6° to 100° C.), it should not lose more than 1 p.c. of moisture. Heated to redness with free access of air it burns without residue.

As commercial Cocaine Hydrochloride frequently contains, in addition to Cocaine, hydrochlorides of some of the other alkaloids of the Coca leaf, the therapeutic actions of which are only imperfectly known and some which are said to be poisonous, it is essential that the purity of this salt should be ascertained before being used for medicinal purposes. According to Paul and Cownley, the most efficient test for this purpose is Maclagan's.

Maclagan Test.—Dissolve 1 grain of the salt in 2 fl. oz. of Water, add 3 drops of Solution of Ammonia (B.P.) and stir briskly with a glass rod; within a few minutes a crystalline precipitate should be thrown down, leaving no turbidity in the supernatant liquid.

This test has recently been subjected to some adverse criticism on the continent. The utility of the test has however been fully established by Boehringer and by Paul and Cownley.—*P.J.* '98, i. 449, 473, 586; *C.D.* '98, i. 511.

Permanganate Test.—A delicate test for the purity of the salt is to add $\frac{1}{2}$ c.c. of $\frac{1}{10}$ p.c. solution of Potassium Permanganate to $\frac{1}{10}$ gramme of the Cocaine salt dissolved in 5 c.c. of Water acidified with Sulphuric Acid. The colour should not disappear within an hour.

For melting point see *P.J.* (3) xxi. 1109; *A.J.P.* '93, 131.

Preparations.

INJECTIO COCAINÆ HYPODERMICA. HYPODERMIC INJECTION OF COCAINE. (NAME ALTERED.)

Cocaine Hydrochloride, 33 grains; Salicylic Acid, $\frac{1}{2}$ grain; Distilled Water, 6 fl. drm., or a sufficient quantity. Boil the Distilled Water; add the Salicylic Acid; dissolve the Cocaine Hydrochloride in the solution when cool; add, if necessary, sufficient recently boiled and cooled Distilled Water to produce 6 fl. drm. of the Injection.

Same strength as *Liquor Cocainæ Hydrochloratis* of the *B.P.* Additions 1890.

Dose.—By subcutaneous injection, 2 to 5 minims.

110 minims contain about 10 grains of Cocaine Hydrochloride; 100 c.c. contain 10 grammes.

LAMELLÆ COCAINÆ. DISCS OF COCAINE. (ALTERED.)

Discs of Gelatin, with some Glycerin, each weighing about $\frac{1}{10}$ grain and containing $\frac{1}{10}$ grain of Cocaine Hydrochloride.

Each Disc is four times the strength of a Disc of Cocaine of the British Pharmacopœia of 1885.

TROCHISCUS KRAMERIE et **COCAINÆ.** See **KRAMERIA.**

Not Official.

PASTILLUS COCAINÆ (*T.H.*).—Contains Cocaine Hydrochloride $\frac{1}{10}$ grain.

TROCHISCI COCAINÆ.—Contains $\frac{1}{10}$ grain of Cocaine Hydrochloride (*G.H.*); $\frac{1}{10}$ grain (*Central Throat*); $\frac{1}{10}$ or $\frac{1}{20}$ grain (*L.H.*) in each.

GUTTÆ COCAINÆ HYDROCHLORATIS (*L.O.H.*).—Cocaine Hydrochloride 10 grains, Distilled Water 1 fl. oz.

EUCAINE (A) (Methylester of Benzoyl- η -methyl-tetra-methyl-gamma-oxy-piperidine-carboxylic Acid).—A synthetic body crystallizing from Alcohol and Ether in prisms melting at 104° C.

EUCAINE HYDROCHLORIDE (A).—A white crystalline body.

Solubility.—1 in 10 of Water; 1 in 3 of Alcohol (90 p.c.). Introduced as a substitute for Cocaine in the production of local anaesthesia. Applied to the throat, nose, and ear in 2, 5 and 8 p.c. solutions. Useful in dental work; injected into the gums before extraction.—*L.* '96, ii. 107, '97, i. 609; *P.J.* '96, i. 342, '96, ii. 337, '97, i. 82; *B.M.J.E.* '97, i. 32, 35, '98, i. 48; *B.M.J.* '97, i. 134, '97, ii. 1560.

In ophthalmic practice it has not been found satisfactory as it causes severe smarting.—*L.* '97, ii. 39; *B.M.J.E.* '97, i. 48, 79.

Eucaine salts may be sterilized by boiling without undergoing decomposition.—*P.J.* '97, i. 82; *B.M.J.E.* '96, ii. 91. Solutions prepared with sterilized water remain clear and require no preservative.—*B.M.J.* '97, i. 134. Physiological action of.—*T.G.* '97, 767.

EUCAINE (B).—(Benzoyl-vinyl-di-aceton-alkamine).—A synthetic product closely allied to Eucaine (A) and Cocaine.

EUCAINE HYDROCHLORIDE (B).—Solubility.—1 in 20 of water; 1 in 14 of Alcohol (90 p.c.).

Is superior to Eucaine Hydrochloride (A) for use in ophthalmic work, as it is free

from the irritating effects of the latter, and is an equally powerful local anaesthetic. Used in 2 p.c. aqueous solution. Solutions may be sterilized by boiling.—*B.M.J.* '97, i. 134; '97, ii. 1560.

ORTHOFORM (Para-methyl-amido-meta-oxybenzoic Acid).—A synthetic product introduced as a substitute for Cocaine. A white, odourless, tasteless crystalline powder, melting at 120° C. Sparingly soluble in Water.

Medicinal Properties.—Local anaesthetic employed in ulcerations of the upper air passages. Useful where nerve endings are exposed, but has no action on unbroken skin and but little on healthy mucous membrane. Best administered as a **spray**, using 10 p.c. solution made with Alcohol (45 p.c.), but may be employed in the crude powder, either alone or mixed with an equal quantity of Lycopodium for insufflation, or as an **ointment** (10 p.c.); a saturated solution of Orthoform in Collodion is used as a varnish. Said to be of value as an anodyne in ulcer or cancer of the stomach in doses of 8 to 16 grains. An aqueous solution of the **Hydrochloride** is used as a **paint**.—*B.M.J.* '98, i. 362; *Pr.* lxi. 505.

As an ointment it is useful in treatment of burns; in ulcers of the leg and in syphilitic ulcers.—*L.* '93, i. 1024; *B.M.J.E.* '98, i. 76; *P.J.* '98, ii. 661.

Non-toxic and powerfully antiseptic. On account of its sparing solubility it is but slowly absorbed.

Nearly 2 oz. have been employed in the course of a week for dusting wounded surfaces without injurious effect.—*B.M.J.E.* '97, ii. 55; *P.J.* '97, ii. 277; *B.M.J.* '98, i. 362.

Used (suspended in Glycerin) for operations within the uterus.—*L.* '98, i. 1434.

ORTHOFORM HYDROCHLORIDE is more soluble in Water and may be employed for internal administration or for urethral injection, but is too acid for hypodermic injection or application to the eye.—*L.* '97, ii. 738; *B.M.J.E.* '97, ii. 55. Injection of a 10 p.c. solution in gleet.—*L.* '97, ii. 738.

Dose.—8 to 16 grains.

BENZOYL-PSEUDOTROPEINE (Tropacocaine, Tropain).—First obtained from Java Coca leaves and afterwards made synthetically. The **Hydrochloride** has been used to produce anaesthesia of the eye during operations; it is much less toxic than Cocaine.—*B.M.J.* '92, ii. 406; '94, ii. 598; *L.* '94, ii. 598; *T.G.* '94, 653; *M.A.* '93, 52.

HOLOCAINE (Para-diethoxy-ethenyl-diphenyl-amidine).—A new synthetic product introduced as a substitute for Cocaine.

Prepared by the interaction of Phenacetin and Paraphenetidin. A powerful base forming sparingly soluble salts with acids. In crystals which melt at 121° C. Insoluble in Water, readily soluble in Alcohol (90 p.c.) and Ether.

HOLOCAINE HYDROCHLORIDE.—The Hydrochloride of the above base. Occurs in colourless needle-shaped crystals.

Solubility.—1 in 50 of Water; 1 in 6 of Alcohol (90 p.c.).

Medicinal Properties.—Used in the form of 1 p.c. solution in ophthalmic surgery. Produces complete and rapid anaesthesia without pain and neither dilates the pupil, nor affects the blood vessels. On account of its toxicity, it cannot be used hypodermically. Its installation into the eye causes a slight feeling of burning which rapidly passes off.—*L.* '97, i. 1466; *B.M.J.* '98, ii. 619; *B.M.J.E.* '97, i. 55, 75, 87, 92; '98, i. 99; *Pr.* lxi. 503.

A 1 p.c. solution did not show the slightest cloudiness when allowed to stand in an open vessel for two months.—*P.J.* '97, i. 363.

COCCUS.

COCHINEAL.

The dried fecundated female insect, *Coccus Cacti*; reared on *Nopalea coccinellifera*, and on other species of *Nopalea*.

When dried in the sun the insects are of an ash-grey colour with a silvery surface, but when killed by immersion in boiling water they have a reddish appearance, and if dried by artificial heat they are black.

Medicinal Properties.—Used chiefly as a colouring agent. Was formerly given in whooping cough.

Official Preparation.—Tinctura Cocci. Used in the preparation of Tinctura Cardamomi Composita and Tinctura Cinchonæ Composita.

Not Official.—Carmine and Liquor Carmini.

Foreign Pharmacopœias.—Official in U.S., *Coccus*; Belg., Swed. and Swiss, *Coccionella*; Fr., *Cochenille*; Port., *Cochonilha*; Mex. and Span., *Cochinilla*; not in the others.

Description.—About one-fifth of an inch (five millimetres) long; somewhat oval in outline, flat or concave beneath, convex above, transversely wrinkled, purplish-black or purplish-grey, easily reduced to powder which is dark-red or puce-coloured.

Test.—When Cochineal is macerated in Water, no insoluble powder is separated. Incinerated with free access of air, it should yield not more than 6 p.c. of ash.

Preparation.**TINCTURA COCCI.** TINCTURE OF COCHINEAL. (ALTERED.)

Cochineal, in powder, 1; Alcohol (45 p.c.), 10. Prepare by the maceration process. = (1 in 10).

Now 1 in 10 instead of 1 in 5, and Alcohol (45 p.c.) used instead of Proof Spirit.

Dose.—5 to 15 minims.

Foreign Pharmacopœias.—Official in Fr. and Mex., 1 in 10; by weight; not in the others.

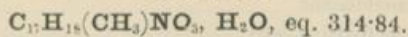
Not Official.

CARMINE.—Prepared from Cochineal, an excellent colouring agent for powders and ointments. It is also used as a staining agent in microscopy.

LIQUOR CARMINI (U.S.N.F.).—Carmine, 480 grains; Water of Ammonia, 6 fl. oz.; Glycerin, 6 fl. oz.; Water sufficient to make 16 fl. oz.

CODEINA.

CODEINE.



An alkaloid obtained from Opium or from Morphine.

Solubility.—1 in 80 of Water; 1 in 24 of boiling Water; 1 in 2 of Alcohol (90 p.c.); 1 in 2 of Chloroform; 1 in 30 of Ether; 1 in 12 of Benzol; 1 in 85 of Liquor Ammoniacæ.

Medicinal Properties.—It has been given with benefit in diabetes (an entire abstinence from starchy food being strictly observed) in doses of 1 grain three times a day, gradually raised to 2 grains. It has been found useful in relieving the hacking cough of phthisis; also ovarian pain.

It has a powerful action in allaying abdominal pain and it can be pushed to a much greater extent than Morphine without causing drowsiness or interfering with the respiration or with the action of the bowels.—*B.M.J.* '88, i. 1214.

Dose.— $\frac{1}{4}$ to 2 grains.

Not Official.—Syrupus Codeinæ (B.P.C.), and Codeine Pastils.

Foreign Pharmacopœias.—Official in Belg., Dan., Dutch, Fr., Hung., Ital., Jap., Mex., Port., Russ., Span., Swed., Swiss and U.S.; not in the others.

Description.—In colourless, or nearly colourless trimetric crystals. The aqueous solution has a bitter taste and an alkaline reaction.

Tests.—The alkaloid dissolves in an excess of Sulphuric Acid, forming a colourless solution, a small quantity of which, when gently warmed on a water-bath with 2 drops of Solution of Ammonium Molybdate or with a trace of Ferric Chloride, or Potassium Ferricyanide, develops a blue or bluish-black colour, which, on the addition of a minute trace of Diluted Nitric Acid, changes to a bright scarlet, becoming orange. Heated to redness in air it yields no ash. Moistened with Nitric Acid the liquid becomes yellow, but not red. A 2 p.c. solution of Codeine in Water acidulated with a few drops of Hydrochloric Acid, gives a whitish precipitate with Solution of Potassium Hydroxide, but not with Solution of Ammonia. A saturated solution of Codeine in Water acidulated with Hydrochloric Acid, should give no blue colour, but only gradually a dull green on the addition of Test-solution of Ferric Chloride and a very dilute solution of Potassium Ferricyanide (absence of Morphine and other impurities).

Adulteration of Codeine with Ammonium Tartrate (*P.J.* (3) xiv. 1035); with sugar crystals (*P.J.* '96, i. 99, 312).

Not Official.

SYRUPUS CODEINÆ (B.P.C.).—Codeine, 8 grains; Proof Spirit, $\frac{1}{2}$ fl. oz.; Water, $\frac{1}{2}$ fl. oz.; dissolve and add Syrup to make 8 fl. oz.

This is the same strength as in former editions of the *Companion*, half the Water being replaced by Proof Spirit.

Dose.—1 to 2 teaspoonfuls.

Foreign Pharmacopœias.—Official in Belg., Fr., Ital., Mex. and Swiss, 1 in 500; Span., 1 in 600; not in the others.

CODEINE PASTILS.—Contain $\frac{1}{8}$ th grain of Codeine in each. One for a dose when the cough is troublesome.

An improvement on Codeine Jelly.

Foreign Pharmacopœias.—Official in Ital., $\frac{1}{12}$ grain in each; not in the others.

CODEINE IODATE.—A combination of Iodic Acid with the alkaloid. Has been introduced as an analgesic. Dose, $\frac{1}{2}$ grain by hypodermic injection.

CODEINÆ PHOSPHAS.

CODEINE PHOSPHATE.

[NEW.]

 $(C_{17}H_{18}(CH_3)NO_3, H_3PO_4)_2, 3H_2O$, eq. 842·20.

The Phosphate of an alkaloid obtained from Opium or from Morphine.

The most soluble salt of Codeine.

Solubility.—1 in 4 of Water; 1 in 200 of Alcohol (90 p.c.).

Medicinal Properties.—See Codeina.

Dose.— $\frac{1}{4}$ to 2 grains.

Official Preparation.—Syrupus Codeinæ.

Foreign Pharmacopœias.—Official in Ger., Norw., Russ. and Swiss; not in the others.

Description.—White crystals which have a slightly bitter taste.

Tests.—A 5 p.c. aqueous solution has a slightly acid reaction, and yields a whitish precipitate with Solution of Potassium Hydroxide, but not with Solution of Ammonia. It affords the reactions characteristic of Codeine and of Phosphates. It loses its water of crystallisation when dried at 212° F. (100° C.), and at a higher temperature melts, forming a yellowish-brown liquid. It should yield no characteristic reaction with the tests for Chlorides or Sulphates. It should not be coloured blue by Test-solution of Ferric Chloride (absence of Morphine).

Preparation.

SYRUPUS CODEINÆ. SYRUP OF CODEINE. (NEW.)

Codeine Phosphate, 40 grains; Distilled Water, $\frac{1}{4}$ fl. oz.; Syrup, 19 $\frac{3}{4}$ fl. oz. Dissolve the Codeine Phosphate in the Distilled Water; add the Syrup; mix.

40 grains of Codeine Phosphate will not dissolve in $\frac{1}{4}$ fl. oz. Distilled Water, it is better to use 180 minims.

Dose.— $\frac{1}{2}$ to 2 fl. drm.

1 fl. drm. of this Syrup contains $\frac{1}{4}$ grain of Codeine Phosphate.

It is twice the strength of the Syrup described in previous editions of the Companion.

COLCHICI CORMUS.*

COLCHICUM CORM.

The fresh corm of *Colchicum autumnale*, collected in early summer; and the same stripped of its coats, sliced transversely, and dried at a temperature not exceeding 150° F. (65·5° C.).

Contains about ·5 p.c. of Colchicine.

* The young corm (an offset of the old one) first appears about the end of June: it flowers late in autumn, the impregnated germen remains latent under ground quite close to the bulb until the following spring, when the capsule rises above the surface, accompanied by several long upright leaves, the seeds ripening in June: after which the leaves decay. The corm is considered to be most active when it is a year old, that is, about July.

Medicinal Properties.—Produces increased action of the kidneys, especially as regards the excretion of urea and uric acid and other solids of the urine; the action of the liver, intestine, and skin is also increased. Employed in gout, especially the acute form, controlling the pain and inflammation and cutting short the attack. May be combined with saline purgatives in cases of hepatic congestion in gouty patients. It is apt to produce depression if given on an empty stomach. The Extract is frequently prescribed with Dover's Powder to relieve painful gout.

In very large doses Colchicum is a powerful stimulant of the liver and intestine. It renders the bile more watery, but increases the secretion of biliary matter proper.—Dr. Rutherford.

Dose of the dried Corm.—2 to 5 grains.

Official Preparations.—Extractum Colchici and Vinum Colchici.

Incompatibles.—Tincture of Iodine, Guaiacum, and all astringent preparations.

Antidotes.—In case of poisoning with Colchicum, emetics followed by demulcent drinks, and, if coma be present, Brandy, Ammonia, Coffee, and other powerful stimulants may be given. Hypodermic injection of $\frac{1}{2}$ grain of Morphine.

Foreign Pharmacopœias.—Official in Fr., Ital., Mex., Port., Span. and U.S.; not in the others.

Description.—The fresh corm is about one inch and a half (thirty-five millimetres) long and an inch (twenty-five millimetres) broad, somewhat conical, hollowed on one side where it has a new corm in process of development, and rounded on the other; covered with an outer thin brown membranous coat, and an inner reddish-yellow one; internally white and solid, and when cut yielding a milky juice of a bitter taste and disagreeable odour. Dried slices are one-tenth or one-eighth of an inch (two or three millimetres) thick, yellowish at their circumference, somewhat reniform in outline; firm, whitish, amylaceous; breaking readily with a short fracture; taste bitter; no odour.

Preparations.

EXTRACTUM COLCHICI. EXTRACT OF COLCHICUM.

Crush fresh Colchicum Corms, deprived of their coats; press out the juice; allow the feculence to subside; decant; heat the clear liquid to 212° F. (100° C.); strain through flannel, and evaporate at a temperature not exceeding 160° F. (71·1° C.) to the consistence of a soft extract.

100 pounds of Corms yield about 4 pounds of Extract.

Dose.— $\frac{1}{4}$ to 1 grain.

Foreign Pharmacopœias.—Official in Belg., Fr., and Mex., Alcoholic Extract of Seeds; Mex. and Span., Alcoholic from Corms; Swiss has **Fluid Extract** of Seeds; Mex. and U.S. **Fluid Extracts** of Corms and Seeds; not in the others.

Ordinary extract of Colchicum (dried at 100° C.) yielded 1·62 p.c. of alkaloid; Acetic Extract yielded 1·55 p.c.—*P.J.* '98, i. 131.

The Acetic Extract is now deleted from B.P.

VINUM COLCHICI. COLCHICUM WINE.

Colchicum Corm in No. 20 powder, 4; Sherry, 20; macerate as directed for Tinctures. = (1 in 5).

Dose.—10 to 30 minims.

Foreign Pharmacopœias.—Official in U.S., 1 in 2.5 White Wine; Fr., 1 and 10 Malaga; Ital., 1 and 10 Marsala; Port., 1 and 10 Maderia; Mex., 1 in 10 Sherry; Span., 1 and 16.6 Sherry.

Diluted Acetic Acid appears to be about as good a solvent as Sherry, but Proof Spirit was better than either.—*P.J.* '97, i. 173. Further notes on the same.—*P.J.* '98, i. 131.

COLCHICI SEMINA.

COLCHICUM SEEDS.

The dried ripe seeds of *Colchicum autumnale*.

The seeds contain .6 to 1.0 p.c. of alkaloid.

Medicinal Properties.—Similar to those of the corm, but considered by some to be superior both in certainty of effect and mildness of operation.

Official Preparation.—Tinctura Colchici Seminum.

Not Official.—Tinctura Colchici Composita, Tinctura Colchici Florum and Vinum Colchici Seminum.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex., Norw., Port., Russ., Span., Swed., Swiss and U.S.

Description.—About one-tenth of an inch (two and a half millimetres) in diameter, subglobular, slightly pointed at the hilum, rough and of a dull reddish-brown colour, minutely pitted, very hard and tough. The endosperm is oily; its cells are seen in transverse section to have thickened walls with large pits. The seeds have a bitter acrid taste, but no odour.

Detection of Colchicine.—*J.S.C.I.* '94, 1099; *C.N.* '94, 26; *J.C.S. Abs.* '95, ii. 300.

Preparation.

TINCTURA COLCHICI SEMINUM. TINCTURE OF COLCHICUM SEEDS.

(ALTERED.)

Colchicum Seeds in No. 30 powder, 4; Alcohol (45 p.c.), a sufficient quantity. Moisten the powder with $2\frac{1}{2}$ of the Alcohol, and complete the percolation process. The resulting Tincture should measure 20.

=(1 in 5).

Now 1 in 5 instead of 1 in 8, and made with Alcohol (45 p.c.) in place of Proof Spirit.

Dose.—5 to 15 minims.

This preparation is made with rather more than one and a-half times the proportion of Colchicum Seeds ordered for the corresponding preparation in the B.P. of 1885.

According to the experiments of Wright and Farr (*P.J.* (3) xxi. 957) the best yield of alkaloid was obtained by 50 p.c. Alcohol (by volume); the average percentage in (1 in 8) tinctures from 10 samples of ground Seeds was .0857, which is equivalent to .685 p.c. in the Seeds, supposing these to be completely exhausted.

From the unbroken Seeds *cold* Alcohol only extracts about one-third of the alkaloid (*P.J.* (3) viii. 507), corroborated by Cripps (*P.J.* (3) xxii. 364).

From the unbroken Seeds *hot* (80° C.) diluted Alcohol (sp. gr. .941) extracts the whole of the alkaloid in a few hours.—*P.J.* (3) xi. 734.

Foreign Pharmacopœias.—Official in Austr. and Jap., 1 in 10; Belg., Fr., Hung., Mex. and Port., 1 in 5; Dutch, Ger., Russ., Swed. and Swiss, 1 in 10; U.S., 15 in 100: all from Seeds. Port. and Span., 1 in 5 with Corms: all by weight except U.S.; not in the others.

Not Official.

TINCTURA COLCHICI COMPOSITA (P.L.).—Colchicum Seeds, bruised, 1; Aromatic Spirit of Ammonia, 8: macerate for seven days, then press and strain.

Dose.—15 to 30 minims.

TINCTURA COLCHICI FLORUM.—Fresh Flowers, 2; Alcohol (90 p.c.), by weight, 1: digest seven days.

It will yield on the average .1 p.c. of total alkaloid.

Dose.—10 to 30 minims. This preparation closely resembles the Eau Médicinale, and is considered by some medical men to be the most effective preparation of any.

VINUM COLCHICI SEMINUM.—Colchicum Seeds in fine powder, 1; Sherry, 10: macerate for seven days, agitating occasionally, strain, press, and filter.

Dose.—10 to 30 minims.

Foreign Pharmacopœias.—Official in Austr. and Dutch, 1 and 10 Malaga; Hung., 1 in 5 Malaga; Belg., 1 and 16.6 Malaga and Spirit; U.S., 15 in 100 White Wine; Dan., Ger., Jap., Norw. and Russ., 1 and 10 Sherry; Fr., 1 and 16.6 Malaga; Port., 1 and 10 Madeira; Swiss, Fluid Extract 1 in 10 Marsala; all by weight except U.S.

Not Official.

COLLINSONIA.

The root of *Collinsonia Canadensis*.

Various preparations of this have been recommended in acute cystitis and in the treatment of renal calculi.—*B.M.J.* '87, ii. 712; *L.* '88, i. 68.

Preparation.

TINCTURA COLLINSONIÆ.—Collinsonia Root, 1; Alcohol (60 p.c.), 10.

Dose.—30 to 120 minims.

COLLODIUM.

COLLODION.

Pyroxylin, 1; Ether, 36; Alcohol (90 p.c.), 12: mix the Ether and the Alcohol; add the Pyroxylin; set aside for a few days; should there be any sediment, decant the clear Collodion.

Now made with Alcohol (90 p.c.) in place of Rectified Spirit.

Mixes with Ether; but when mixed with Water or Alcohol (90 p.c.) the Pyroxylin is thrown out.

Official Preparations.—Collodium Flexile and Collodium Vesicans.

Description.—A colourless, highly inflammable liquid of syrupy consistence and ethereal odour. It dries quickly upon exposure to the air, and leaves a thin transparent film, which contracts rapidly on drying and is insoluble in Water or Alcohol (90 p.c.).

Foreign Pharmacopœias.—Official in Austr., Hung. and Jap., proportions not given; Belg., Pyroxylin 1, Ether 20, Alcohol (90 p.c.) 2½, Castor Oil 1½;

Dutch, Pyroxylin 3, Ether 80, Alcohol (90 p.c.) 17; Fr., Pyroxylin 1, Ether 15, Alcohol (95 p.c.) 4; Dan., Ger., Russ. and Swiss, Pyroxylin 1, Ether 21, Alcohol (90 p.c.) 3; Ital., Pyroxylin 1, Alcohol (90 p.c.) 4, Ether 12; Mex., Pyroxylin 5, Alcohol (90 p.c.) 20, Ether (720) 75; Norw., Pyroxylin 4, Ether 84, Alcohol (90 p.c.) 12; Port., Pyroxylin 1, Ether 14, Alcohol (90 p.c.) 4, Castor Oil 1; Span., Pyroxylin 1, Ether 25, Alcohol (90 p.c.) 3; Swed., Pyroxylin 1, Ether 35, Alcohol (90 p.c.) 5; U.S., Pyroxylin 3, Stronger Ether 75, Alcohol (94 p.c.) 25; all by weight except U.S.

Preparations.

COLLODIUM FLEXILE. FLEXIBLE COLLODION.

Collodion, 12 fl. oz. Canada Turpentine, $\frac{1}{2}$ oz. (by weight); Castor Oil, $\frac{1}{4}$ oz. (by weight): mix.

Medicinal Properties.—Chiefly used for coating with a protective film, fresh wounds, leech bites, and fissured nipple; it has been recommended as an application to erysipelatous surfaces and to burns, and to prevent the pitting of smallpox. A large number of substances can be dissolved in Collodion to form medicated Collodions; some of these are noticed under other headings.

It does not contract in drying.

Not Official.—Styptic Colloid and Hæmostatic Collodion.

Foreign Pharmacopœias.—(Known also as Collodium Elasticum).—Official in Austr., Russ. and Swiss, Collodion 49, Castor Oil 1; Dan., Collodion 99, Castor Oil 1; Dutch, Collodion 96, Castor Oil 4; Fr., Collodion 15, Castor Oil 1; Ger., Collodion 94, Turpentine 5, Castor Oil 1; Hung., Collodion 50, Castor Oil 1; Ital., Collodion 97, Castor Oil 3; Jap., Collodium 30, Castor Oil 1; Norw., Collodium 99, Glycerin 1; Swed., Collodion 100, Glycerin 1; Mex. and Span., Collodion 10, Castor Oil 1; U.S., Collodion 92, Canada Turpentine 5, Castor Oil 3; Belg. (Collodium), and Port. (Collodio), both contain Castor Oil. See COLLODIUM.

COLLODIUM VESICANS (BLISTERING COLLODION).—See CANTHARIS.

Not Official.

STYPTIC COLLOID (DR. RICHARDSON'S).—A saturated solution of Tannic Acid and Pyroxylin in Absolute Alcohol and Pure Ether. In the first step of the process, the Tannic Acid, rendered as pure as it can be, is treated with Absolute Alcohol, and digested in it for several days. Then the Pure Ether, also absolute, is added until the whole of the thick Alcoholic Mixture is rendered quite fluid. Lastly the Pyroxylin is added until it ceases readily to dissolve. A little Benzoin may be added to give an agreeable odour to the Colloid.

It can be applied directly with a brush, or mixed with an equal quantity of Ether, and used in the form of **spray**.

HÆMOSTATIC COLLODION (DR. PAVESI'S).—Collodion, 100; Carbolic Acid, 10; Tannic Acid, 5; Benzoic Acid, 5: dissolve. Is applied by means of a camel-hair pencil, or by soaking strips of linen in it.

COLLODIUM SALICYLICUM.—See ACIDUM SALICYLICUM.

COLOCYNTHIDIS PULPA.

COLOCYNTH PULP.

The dried pulp of the fruit of *Citrullus Colocynthis*, freed from seeds. The fruit is imported chiefly from Smyrna, Trieste, France and Spain.

Medicinal Properties.—It is a powerful drastic hydragogue cathartic, dangerous in large doses; but very commonly prescribed as an aperient, in the form of Compound Extract or Pill combined with Henbane. The Tincture is ordered in Mixtures.

In large doses a powerful hepatic as well as intestinal stimulant; it renders bile more watery, but increases the secretion of biliary matter.—Dr. Rutherford.

Dose.—Not given in B.P.; 2 to 8 grains, but seldom prescribed alone.

Official Preparations.—Extractum Colocynthis Compositum and Pilula Colocynthis Composita; Pilula Colocynthis Composita is used in the preparation of Pilula Colocynthis et Hyoscyami.

Not Official.—Tinctura Colocynthis.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr. (Coloquinte), Ger., Hung., Ital. (Coloquintide), Jap., Norw., Port. (Coloquintidas), Russ., Mex. and Span. (Coloquintida), Swed., Swiss and U.S.

Description.—The fruit is usually imported peeled, in more or less broken balls about two inches (five centimetres) or less in diameter. The Pulp, which alone is official, is light, spongy, whitish, and odourless, but intensely bitter.

Tests.—It should not yield the characteristic reactions with the tests for Starch, and only traces of fixed Oil should be removed from it by Ether. It yields, when dried at 212° F. (100° C.) and incinerated, at least 9 p.c. of ash (indicating absence of seeds).

These tests are intended to exclude: 1. Adulteration with Starch, which of course need not be expected in dealing with any respectable drug-house; 2. Imperfect separation of Seeds. This latter is the point most worthy of attention in connection with Colocynth. According to Tichborne the unpeeled fruit consists of Seeds (inert) 47 p.c., Rind (almost inert) 34 p.c., Pulp (active) 19 p.c., (*Y.B.P.* '78, 564). The decorticated Pulp will therefore contain 71 p.c. of Seeds.

212 lbs. of peeled Colocynth fruits ground under small edge-running stones so as to crush the pulp without breaking the seeds yielded 48 lbs. of pulp containing 12 p.c. of ash, and 164 lbs. of seeds containing 2.37 p.c. of ash. This method may be safely used for separating pulp from seeds.—*C.D.* '96, i. 277.

A sample of very fine decorticated Colocynth examined by us in 1878 yielded 66 p.c. of Seeds.

The removal of the Seeds commercially is carried out very imperfectly; we have bought Colocynth Pulp from wholesale houses in London containing from 4 p.c. up to 33 p.c. of Seeds, 10 p.c. being quite a common figure. Now, as the Seeds contain about 15 p.c. of Oil (they are stated (*Y.B.P.* '78, 565) to contain 50 p.c.), it is doubtful whether a single trade sample could be found which would pass the Official Ether test, even on the supposition that the Pulp itself was free from Ether-soluble constituents. But the Pulp *perfectly freed from Seeds* yields to Ether about 3 p.c. of extractive of an oily nature, so that the Official test should be completely modified. If complete separation of Seeds be insisted upon, the Ether extractive should not exceed 4 p.c., but a maximum of 5 p.c. would probably serve all practical purposes. This would allow about 10 p.c. of Seeds supposing them to contain 15 p.c. of Oil.

The proportion of ash as indicated in *Companion* 1886, also furnishes a good test. We have found the ash of the Pulp to vary between 8.6 and 14 p.c., and that of the Seeds between 2.2 and 4 p.c.; on these figures Colocynth Pulp with an

allowable 10 p. c. of Seeds would yield not less than 8 p. c. of ash. It should be noted that the ash both of Pulp and Seed is very deliquescent.

Preparations.

EXTRACTUM COLOCYNTHIDIS COMPOSITUM. COMPOUND EXTRACT OF COLOCYNTH. (ALTERED.)

Colocynth Pulp, 6; Extract of Barbados Aloes, 12; Scammony Resin, 4; Curd Soap, in shavings, 4; Cardamom Seeds, in the finest powder, 1; Alcohol (60 p.c.), 160. Macerate the Colocynth Pulp in the Alcohol for four days; press out the tincture; remove the Alcohol by distillation; add the Extract of Aloes, Scammony Resin, and Soap; evaporate to the consistence of a firm extract, adding the Cardamoms towards the end of the process.

Extract of Barbados Aloes used instead of Extract of Socotrine Aloes, Curd Soap increased; Alcohol (60 p.c.) in place of Proof Spirit.

Dose.—2 to 8 grains.

The product weighs 24, therefore in every 6 of Extract. Coloc. Compos. there is the power of $1\frac{1}{2}$ of Pulp = Simple Extract $\frac{1}{2}$, Extract of Aloes 3, Resin of Scammony 1, Curd Soap $\frac{1}{4}$, Cardamoms $\frac{1}{4}$, Water $\frac{1}{2}$.

Better to evaporate the Colocynth Extract to dryness, powder it, and mix with the other ingredients to form Pulv. Ext. Coloc. Co.

Commonly prescribed with Extract of Hyoscyamus, to prevent griping.

An examination of commercial samples.—*C.D.* '96, i. 277.

Foreign Pharmacopœias.—Official in Port., Colocynth 30, Aloes 55, Scammony 22, Hard Soap 15, Cardamoms 3; Span., contains Colocynth, Aloes, Scammony, and six other ingredients; Swed., Colocynth 5, Aloes 10, Scammony 3, Cardamoms 1, Soap 2; Swiss, Extract of Colocynth 2, Extract of Aloes 10, Scammony 4, Cardamoms 1, Soap 3, Russ., Extract Colocynth 3, Aloes 10, Scammony 8, Extract of Rhubarb 5; U.S., Extract Colocynth 16, Purified Aloes 50, Resin Scammony 14, Cardamoms 6, Soap 14; not in the others. Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex., Russ., Swiss and U.S., have Simple Extract made with Alcohol.

PILULA COLOCYNTHIDIS COMPOSITA. COMPOUND PILL OF COLOCYNTH.

Colocynth Pulp, in powder, 1; Barbados Aloes, in powder, 2; Scammony Resin, in powder, 2; Potassium Sulphate, in very fine powder, $\frac{1}{4}$; Oil of Cloves, $\frac{1}{4}$; Distilled Water, a sufficient quantity (about $\frac{1}{4}$). Triturate the Oil of Cloves with the Potassium Sulphate; add the Colocynth Pulp; mix; add the Barbados Aloes and Scammony Resin; after mixing intimately add the Distilled Water and beat to form a mass. = (about 1 in 6).

Dose.—4 to 8 grains.

For dispensing, keep the powders and oil ready mixed, and make up the mass as required with Water, or better still with Alcohol (60 p.c.).

Dr. Gregory's favourite pill.

The *minimum* dose is somewhat high, as it is frequently prescribed in smaller doses. The same may be said of the next pill, which is only two-thirds of the strength.

Foreign Pharmacopœias.—Official in Fr., Colocynth in powder 10, Aloes 10, Scammony 10, Honey q.s., Oil of Cloves 2; Norw., Colocynth 2, Aloes 4, Scammony 4, Oil of Cloves $\frac{1}{2}$, Suet 3, Glycerin 3; Span., Compound Extract of

Colocynth 20, Extract of Colchicum 20, Extract of Opium 1; Swed., Compound Extract of Colocynth 7, Cloves 1, Jalap 2, Extract of Wormwood q.s.; not in the others.

PILULA COLOCYNTHIDIS ET HYOSCYAMI. PILL OF COLOCYNTH AND HYOSCYAMUS.

Compound Pill of Colocynth, 2; Extract of Hyoscyamus, 1. Mix to form a mass. = (Pil Coloc. Co. 6; Extr. Hyos. 3).

Dose.—4 to 8 grains.

Foreign Pharmacopœias.—Official in Jap.; not in the others.

This mass when made into 5 grain pills is known as Hamilton's pill, and when in 2½ grain pills it is known as Christison's pill.

Not Official.

TINCTURA COLOCYNTHIDIS.—Colocynth Pulp, in coarse powder, 1; Alcohol (90 p.c.), 10. Made by maceration.

Dose.—10 to 15 minims three times a day.

Foreign Pharmacopœias.—Official in Belg., Hung. and Mex., 1 in 5; Jap., Russ. and Swiss, 1 in 10; Ger., Fruits 1, Alcohol 10; Swed., 1 in 10, with Anise Fruits $\frac{1}{6}$; Dutch, 1 in 14, with $\frac{1}{2}$ Anise Fruits.

Not Official.

CONDURANGO CORTEX.

The bark obtained from *Gonolobus condurango*.

Medicinal Properties.—It was introduced as a remedy for cancer, but it has not fulfilled the expectations formed of it. It relieves catarrh and hyperæsthesia of the stomach, and has been used with benefit in ulcer and cancer of the stomach, relieving the vomiting, pain and hæmatemesis, and improving the appetite.—*L.M.R.* '88, 337; *L.* '95, i. 1004.

Foreign Pharmacopœias.—Official in Austr., Dan., Dutch, Ger., Mex. and Russ.; not in the others.

CONFECTIONES.

CONFECTIONS.

The following are now contained in the British Pharmacopœia, the formulas for which will be found under the names of the substance from which they are prepared:—

CONFECTIO PIPERIS. Dose, 1 to 2 drm.

CONFECTIO ROSÆ GALLICÆ.

CONFECTIO SENNÆ. Dose, 1 to 2 drm.

CONFECTIO SULPHURIS. Dose, 1 to 2 drm.

CONIUM.

CONIUM.

The fresh leaves and young branches of *Conium maculatum*, as well as the dried unripe fruits are Official, and are described under 'Conii Folia' and 'Conii Fructus.'

Medicinal Properties.—Sedative and antispasmodic; allays the cough in bronchitic affections, pertussis, and phthisis. Has been recommended in chorea and other spasmodic affections; also in visceral neuralgias and gastric pains. Applied externally in the form of **ointment** to ease pain of anal fissure or hæmorrhoids, and cancer.

Pharmacological comparison of a standardised fluid extract, with a solution of the mixed alkaloids, and a solution of Conine. As a result of experiments on animals (guinea pigs and rabbits), the same general action was observed as belonging to Conine, the mixed alkaloids, and the fluid extract.—*P.J.* '97, ii. 136.

Dose.—Of the Succus 1 to 2 fl. drm. Of the Tincture 30 to 60 minims.

Incompatibles.—Caustic Alkalis, and vegetable Astringents.

Official Preparations.—Succus Conii from the **Folia**. Unguentum Conii from the **Succus**. Tinctura Conii from the **Fructus**.

Not Official.—Conina and Coninæ Hydrobromidum.

Antidotes.—In case of poisoning by Hemlock, stomach tube or emetics, followed by stimulants, Strychnine hypodermically, artificial respiration.

CONII FOLIA. CONIUM LEAVES.

The fresh leaves and young branches of *Conium maculatum*, collected when the fruit begins to form.

Foreign Pharmacopœias.—Official in Belg. and Fr., Leaves; Austr., Dutch, Ger., Ital., Mex., Port., Russ., Span. and Swed., Herb; not in Dan., Hung., Jap., Norw., Swiss or U.S.

Description.—The leaves are more or less divided in a pinnate manner, the lower decomposed and sometimes two feet (nearly seventy centimetres) in length, glabrous, and arising from a smooth stem. Marked with dark purple spots, the clasping petioles are of varying length, those of the lower leaves being hollow. The ultimate divisions of the leaves terminate in smooth, colourless, horny points. The odour is strong and disagreeable, resembling that of mice, more especially when rubbed with Solution of Potassium Hydroxide.

Preparations.

SUCCUS CONII. JUICE OF CONIUM. (MODIFIED.)

Bruise the fresh leaves and young branches of *Conium maculatum*; press out the juice; to every three volumes of juice add 1 of Alcohol (90 p.c.); set aside for seven days; filter.

Now made with Alcohol (90 p.c.) in place of Rectified Spirit.

Dose.—1 to 2 fl. drm.

Much larger doses are given.

UNGUENTUM CONII. CONIUM OINTMENT. (ALTERED.)

Juice of Conium, 2; Hydrous Wool Fat, $\frac{3}{4}$. Evaporate the Juice of Conium on a water-bath to one-eighth of its volume, at a temperature not exceeding 140° F. (60° C.); add the Hydrous Wool Fat; mix by trituration.

Boric Acid is now omitted.

Contrary to what might have been expected, the alkaloidal strength of the Juice is not affected by the evaporation.

Becomes mouldy on keeping.—*P.J.* '98, ii. 165, 232.

CONII FRUCTUS. CONIUM FRUIT.

The dried, full-grown, unripe fruits of *Conium maculatum*.

The alkaloidal value of the fruits appears to be as variable as that of the leaves. Some estimations published (*C.D.* '92, ii. 401) gave .17 to .91, average .58 p.c. of Conine.

Alkaloidal strength of Hemlock leaves, fresh and dried, in various stages of development. The yellow fruits yielded a much smaller amount of alkaloid than those gathered earlier. No appreciable loss of alkaloid occurs in drying Hemlock fruit at 100° F. Good dried fruits should yield about 2 p.c. of alkaloidal hydrochlorides.—*Y.B.P.* '93, 368.

Determination of the alkaloidal contents of the stems, leaves, flowers and green fruits of Conium tabulated.—*P.J.* '96, ii. 89; *C.D.* '96, ii. 190.

Description.—Broadly ovoid in shape, greenish-grey in colour; about one-eighth of an inch (three millimetres) long, and nearly as broad, somewhat laterally compressed, and crowned by the depressed stylopod. In the drug as met with in commerce the mericarps are usually separated; each is glabrous and possesses five irregular, more or less crenate primary ridges; the endosperm is deeply grooved on the commissural surface, and in the transverse section of the mericarp no vittæ are visible. No marked odour or taste, but when rubbed with Solution of Potassium Hydroxide a strong disagreeable odour is produced, resembling that of mice.

Foreign Pharmacopœias.—Official in Belg., Fr., Mex., Port., Span., Swiss and U.S.; not in the others.

Preparation.**TINCTURA CONII.** TINCTURE OF CONIUM. (ALTERED.)

Conium Fruit, recently reduced to No. 40 powder, 1; Alcohol (70 p.c.) a sufficient quantity. Moisten the powder with 1 of the Alcohol, and complete the percolation process. The resulting Tincture should measure 5. = (1 in 5).

Now 1 in 5 instead of 1 in 8, and Alcohol (70 p.c.) used in place of Proof Spirit.

Dose.—30 to 60 minims.

From the experiments of Wright and Farr, in 1891 (*P.J.* (3) xxi. 858), it would appear that after eliminating one sample of evidently damaged seed, the percentage of alkaloid in ten samples of Tincture averaged .0854 (corresponding to .683 p.c. in the fruit). The percentages were very variable, being .064 to .157. Alcohol 70 to 80 p.c. by volume is the best alkaloidal solvent, and a very fine powder is in no way necessary. Continuous percolation gave a product slightly stronger than the old Official macero-percolation process.

Examination of Commercial Tinctures.—*C.D.* '95, ii. 199.

Foreign Pharmacopœias.—Official in Belg. and Port., Tinct. Cicutæ, 1 in 5, also Fresh Herb 1, Spirit 1; Fr. and Span., from dried leaves, 1 in 5, Fr., also Alcoolature, fresh Herb 1, Spirit 1, also Ethereal 1 in 5; Mex., leaves, 1 in 5; not in the others.

Not Official.

CONINA. *Syn.*—CICUTINE. $C_8H_{17}N$, eq. 126.22. A colourless volatile liquid alkaloid, with a characteristic penetrating odour. It is obtained from *Conium maculatum* by distilling the fruit with dilute Potash or Soda, and purified by conversion into a Tartrate. It unites with acids to form crystalline salts, which are much more stable than the alkaloid.

Sp. gr. .886 (Schorm), .844 (Ladenburg). It boils at about 336° F. (169° C.). It is dextro-rotatory.

Solubility.—1 in 100 of Water. It mixes in all proportions with Alcohol and Ether.

Dose.—It has been given in doses of $\frac{1}{16}$ grain to 2 grains, but the foreign Pharmacopœias give much smaller doses, 1 to 4 milligrammes ($\frac{1}{16}$ to $\frac{1}{8}$ grain).

Foreign Pharmacopœias.—Official in Belg., Fr., Mex., Span. and Swed.; not in the others.

CONINÆ HYDROBROMIDUM.—A colourless crystalline salt. The usual form for prescribing Conine, of which it contains about 60 p.c.

Solubility.—1 in 2 of Water; 1 in 3 of Alcohol (90 p.c.).

Foreign Pharmacopœias.—Official in Mex. and Russ.; not in the others.

Not Official.

CONVALLARIA.

The entire plant of *Convallaria majalis* (Lily of the Valley).

Medicinal Properties.—A cardiac tonic; diuretic. Not cumulative like Digitalis, but according to Mitchell Bruce it is a very uncertain remedy. It has been long employed by the Russian peasantry as a remedy for dropsy. The late Professor Sée considered that it may be used in all forms of heart failure, for it has none of the nauseating effects of Digitalis, nor does it exhaust the contractility of the heart and arteries.

Foreign Pharmacopœias.—Official in Fr. (Muguet), Ital., Mex. and Span. (Lirio de los Valles), Swiss and U.S.; not in the others.

Preparations.

EXTRACTUM CONVALLARIÆ.—(Fr., Ital. and Span.)—Stalks and flowers of Convallaria freshly gathered and dried with one-third quantity of leaves and roots. Cut and infuse twelve hours in six times the weight of Distilled Water. Press, and repeat the operation. Mix the two liquors and evaporate to a soft extract. Dissolve this in sufficient cold Distilled Water. Filter and evaporate over a water-bath to the consistence of a hard extract. Also made from expressed juice, clarified.

The Russians prepare it from the flowers only.

Dose.—Professor Sée gave $\frac{1}{2}$ to 1 gramme daily. Dr. Sansom recommends 5 to 8 grains three times a day. Convallaria contains 2 glucosides—**Convallarin**, a purgative, and **Convallamarin**, allied to Digitalin in its action on the heart; the dose of the latter is $\frac{1}{2}$ to 2 grains.

Foreign Pharmacopœias.—Official in Swiss and U.S., **Fluid Extract**, with diluted Alcohol, 1 in 1; Mex. (Aqueous Extract) from Roots; not in the others.

TINCTURA CONVALLARIÆ (B.P.C.)—Lily of the Valley flowers and stalks dried, in No. 20 powder, 1; Proof Spirit sufficient to percolate 8.

Dose.—5 to 20 minims.

COPAIBA.

COPAIBA.

B.P. Syn.—COPAIVA.

The Oleo-Resin obtained from the trunk of *Copaifera Lansdorfii*, and other species of *Copaifera*.

Obtained from the northern part of South America. The commercial varieties Para, Maranhão, Maracaibo and Angostura, are named from the various ports of shipment. Sp. gr. varies from (Para) .916 to (Maracaibo) .995 or (Angostura raw) 1.009. Resin (Para) 23.87 to (Maracaibo) 61.43. Sp. gr. of Etherial Oil (Para) .897 to (Bahia) .908.—*Y.B.P.* '86, 221.

Solubility.—(nearly clear) 1 in 1 (*or less*) of Alcohol (90 p.c.) but if more Alcohol be added it becomes cloudy; in all proportions of Absolute Alcohol, Ether, Benzol, and the fixed and volatile Oils; also in four times (*or less*) its bulk of Petroleum Spirit, the solution only yielding a filmy deposit on standing; also 1 in 2 (*or less*) of Glacial Acetic Acid.

Medicinal Properties.—Stimulant and antiseptic, diuretic. Acts more particularly upon the mucous membrane of the genito-urinary tract. Used in gonorrhœa, after the acute stage has passed, and in gleet. Useful in chronic bronchitis and bronchiectasis, when a disinfectant expectorant is indicated. The **resin** is used as a diuretic in cardiac and hepatic dropsy, but not in renal.

Dose.—30 to 60 minims.

Prescribing Notes.—Can be given in the form of **pills** or **paste** (*see p. 245*), also in **capsules**. It may be suspended in water by means of Mucilage (*see p. 2*) or Tincture of Quillaia, or Liquor Potassæ which saponifies it. Cinnamon Water, Peppermint Water, the Tinctures of Orange and Ginger have been used as flavouring agents. The **Oil** of Copaiba can be suspended by means of Mucilage, as can also the **Resin** of Copaiba (*see p. 2*).

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr. (Copahu), Ger., Hung., Ital., Jap., Mex., Norw., Port. (Terebinthina Copahiba), Russ., Span., Swed., Swiss and U.S.

Description.—A more or less viscid liquid; generally transparent and not fluorescent, but some varieties are opalescent and occasionally slightly fluorescent; light yellow to pale golden brown, having a peculiar aromatic odour, and a persistent acrid somewhat bitter taste. Its sp. gr. varies from .916—993. Entirely soluble in Absolute Alcohol, and in four times its bulk of Petroleum Spirit, the latter solution yielding only a filmy deposit on standing.

Test.—A small quantity heated until all volatile Oil is removed yields a residue which when cold is hard and easily rubbed to powder (absence of fixed oil); and the Oil volatilised during the operation does not smell of Turpentine. The volatile Oil should be present to the extent of at least 40 p.c., and should rotate the plane of a ray of polarised light from 28° to 34° to the left (absence of African Copaiba), and should not boil under 482° F. (250° C.). When 2 drops are dissolved in 20 parts of Carbon Bisulphide, and a drop of a cooled mixture of equal parts of Nitric and Sulphuric Acids added, a transient violet colour is not produced (absence of Gurjun Balsam). 4 drops of Copaiba, carefully added to a mixture of half an ounce of Glacial Acetic Acid with 4 drops of Nitric Acid, should not afford a reddish or purple colour (absence of Gurjun Balsam).

The violet colour with Nitric and Sulphuric Acids produced by Gurjun Balsam is generally stated to be pretty permanent.—*P.J.* '98, ii. 645.

The presence of Hydrocarbon Oil will be shown by warming 1 c.c. of the Balsam with 4 c.c. Alcohol (95 p.c.) in a test-tube, when it forms a separate layer at the bottom of the tube.—*A.J.P.* '95, 395.

Kebler in an exhaustive paper on the characters and tests for Copaiba finds the Glacial Acetic Acid test the most reliable, and does not consider the determination of the acid number satisfactory. Dietrich however thinks a quantitative test for Gurjun Balsam should certainly be included in the Pharmacopœia, and suggests the determination of the acid and saponification number.—*A.J.P.*, '95, 395; '96, 143; '97, 577; *C.D.* '98, ii. 129. A process for determining the same is given in the German Pharmacopœia, and a modification in *J.S.C.I.* '98, 806.

Hirschsohn's test for fatty oils.—*P.J.* '97, ii. 74.

Detection of Castor oil in Copaiba Balsam.—*J.S.C.I.* '94, 981.

Preparation.

OLEUM COPAIBÆ. OIL OF COPAIBA.

The Oil distilled from Copaiba.

The yield appears to be from 41 to 60 p.c.—*Y.B.P.* '91, 414.

Solubility.—1 in 20 of Alcohol (90 p.c.); nearly insoluble in Alcohol (60 p.c.); mixes in all proportions with Absolute Alcohol.

Dose.—5 to 20 minims.

Foreign Pharmacopœias.—Official in U.S.; not in the others.

Description.—Colourless or pale yellow, with the odour and taste of Copaiba.

Tests.—Sp. gr. .900 to .910. It turns the plane of a ray of polarised light to the left, and is soluble in its own volume of Absolute Alcohol (distinction from African Copaiba Oil).

Sp. gr. varies considerably with the age of the Oil and its exposure to air.

It has a neutral reaction. Boils between 245° and 260° C.

Not Official.

MISTURA COPAIBÆ (*L.H.*).—Copaiba, 20 minims; Tincture of Quillaia, 20 minims; Spirit of Nitrous Ether, 30 minims; Camphor Water to 1 fl. oz.

PASTA COPAIBÆ.—Copaiba, 8; Powdered Cubebs, 24; Extract of Hyocyamus, 1; Camphor, 1; Treacle, q.s.

Dose.—A piece the size of a filbert nut three or four times a day in gonorrhœa.—*L.* '88, i. 1019.

PILULA COPAIBÆ.—Copaiba, 94; Magnesia, 6; mix intimately and set aside to concrete. Should the mixture not concrete in eight or ten hours, the Copaiba before use should be shaken with $\frac{1}{10}$ of its weight of Water, then the uncombined Water allowed to subside and the Copaiba poured off.

Foreign Pharmacopœias.—Official in Belg., Balsamum Copaibæ Solidifactum; U.S., Massa Copaiba.

RESINA COPAIBÆ.—Prepared from the Oleo-resin by distilling off the Volatile Oil.

A yellowish or brownish-yellow brittle resin, with an acid reaction. Soluble in Alcohol.

Foreign Pharmacopœias.—Official in U.S.; not in the others.

CORIANDRI FRUCTUS.

CORIANDER FRUIT.

The dried ripe fruit of *Coriandrum sativum*.

The ash was determined of the fruits (three samples), 4.69, 5.28, 5.74 p.c., and of Pulvis Coriandri, 5.64, 5.7, 7.09, 7.79 p.c.

Medicinal Properties.—Stimulant, aromatic, and carminative.

Dose.—20 to 60 grains.

Official Preparation.—Oleum Coriandri. Contained in Confectio Sennæ, Syrupus Rhei, Tinctura Rhei Composita, and Tinctura Sennæ Composita. The Oil is contained in Syrupus Sennæ.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Hung., Mex. (Culantro), Norw., Port. (Coentro), Span. (Colantro), Swed. and U.S.; not in Ger., Ital., Jap. or Russ.

Description.—Nearly globular, about one-fifth of an inch (five millimetres) in diameter, uniform brownish-yellow in colour, and glabrous. The two mericarps usually remain closely united, and are crowned by the calyx teeth and stylopod. Primary ridges wavy and inconspicuous; secondary ridges straight and more prominent. The transverse section exhibits two vittæ on the commissural surface of each mericarp. Odour aromatic, especially when bruised; taste agreeable.

Preparation.**OLEUM CORIANDRI.** OIL OF CORIANDER.

The Oil distilled from Coriander fruit.

Consists to the extent of 90 p.c. of **Coriandrol**, $C_{10}H_{16}O$, dextro-rotatory; sp. gr. .868; boiling point 194° – 198° C.—*P.J.* (3) xxi. 940.

Sp. gr. (several samples examined) .867–.887.

Solubility.—2 in 1 of Alcohol (90 p.c.); 1 in 75 of Alcohol (60 p.c.).

1 lb. of fruit yields about 42 grains of Oil.

Used to render medicines more palatable, and prevent griping.

Dose.— $\frac{1}{2}$ to 3 minims.

Foreign Pharmacopœias.—Official in U.S.; not in the others.

Description.—Colourless or pale yellow, having the odour and flavour of the fruit.

Tests.—Sp. gr. .870 to .885. If 1 c.c. of the Oil be mixed with 3 c.c. of Alcohol (70 p.c.), a clear solution results (absence of Oil of Turpentine and added Terpenes).

Not Official.**COTO.**

A bark from Bolivia—origin unknown.

It contains a bitter principle, **Cotoin**, sparingly soluble in cold Water, soluble in Alcohol.

Paracotoin is obtained from an allied bark, which has similar properties.

It is difficult to distinguish true Coto bark from the Para variety, but Coto bark is practically unobtainable in English commerce at the present time. Paracoto bark is stouter and has a rougher inner surface. The glucoside Cotoin melts at 124° C.,

and gives a blood-red coloration with Nitric Acid, while the melting point of Paracotoin is 152° C. and with Nitric Acid only turns yellow.—*C.D.* '84, 530.

Medicinal Properties.—Aromatic stimulant and intestinal astringent. Has been used in chronic diarrhoea.

Cotoin is recommended as checking the night sweats of phthisis. Dose $\frac{1}{2}$ grain. *L.* '96, 255.

Preparation.

TINCTURA COTO (*B.P.C.*).—Coto Bark bruised 1; Rectified Spirit 10: macerate seven days, press, filter, and add Rectified Spirit to make 10.

Dose.—10 to 30 minims.

CREOSOTUM.

CREOSOTE.

A mixture of Guaiacol, Creosol, and other Phenols; obtained in the distillation of Wood Tar.

It preserves animal substances from decay, from which property its name is derived. It is to the presence of this substance that the process of smoking hams owes its efficacy.

The two chief constituents of Creosote are **Guaiacol** and **Creosol**, the first of which predominates in some specimens and the second in others. Beechwood Creosote contains most Guaiacol; formerly it was stated to contain more than 60 p.c., but when the demand for Guaiacol and its salts arose, the proportion in commercial Creosote dropped to 20 p.c. It can now be obtained containing 50 p.c.

Guaiacol is soluble 1 in 80 of Water, and mixes with Glycerin in all proportions. Creosol is soluble 1 in 150 of Water, and will not form a clear solution with Glycerin in any proportion.

Solubility.—Beechwood Creosote is soluble about 1 in 110 of Water and mixes in all proportions with Alcohol (90 p.c.), Absolute Alcohol, Ether sp. gr. .735 and .720, Glacial Acetic Acid, Chloroform, Benzol, and Petroleum Spirit, it also mixes with Glycerin in all proportions up to nearly 3 of Glycerin to 1 of Creosote, but on the further addition of Glycerin the mixture is turbid.

'English Creosote' differs from Beechwood Creosote in that it is not nearly so soluble in Water, and does not mix readily with Glycerin. It dissolves about 1 in 350 of Water, and forms a turbid mixture with equal volumes of Glycerin.

Medicinal Properties.—Disinfectant and antiseptic. Given internally in gastric fermentation, in putrefactive diarrhoea, and in phthisis with abundant fetid sputum (see below); for arresting nausea in hysteria, for obstinate sea-sickness, and the vomiting of pregnancy. A lotion (8 minims to 1 oz.) and the **ointment** are used for eruptions of a scaly character, for venereal ulcers and in parasitic skin diseases; toothache, when depending on caries, is relieved by its application. As an **inhalation** in fetid bronchitis and in phthisis.

Employed by internal administration with considerable success in phthisis, commencing with 5 minims in 2 fl. drm. Cod Liver Oil three times daily after meals and gradually increasing till at the end of three or four weeks 30 to 60 minims or even 80 minims are being taken three times daily. It is said to have no

tendency to bad effects even in such large doses. Should a patient be unable to take Cod Liver Oil, the Creosote may then be prescribed in spiritous solution. If the best Beechwood Creosote be used and due care exercised in increasing the dose gradually, it will be found to produce good results without unpleasantness or risk.—*B.M.J.* '98, i. 144, 299, 1383.

One drop of Creosote at bedtime every night for juvenile incontinence of urine (*B.M.J.* '87, i. 809). In diabetes 4 drops daily increased to 10 drops (*L.* '89, i. 702). Its effects on the virulence of the Tubercle Bacillus (*L.* '94, ii. 684). Intratracheal injection of Creosoted Oil (1 in 20) to aid the expulsion of false membrane after Tracheotomy.—*B.M.J.* '98, i. 1381.

Successful in cases of tuberculosis in children by pills and drops (*T.G.* '93, 766).

Hypodermic injection of Creosote and Guaiacol dissolved in sterilised Almond Oil, 1 in 5 or 1 in 15.—*L.* '96 ii., 371; *B.M.J.* '95, ii. 1488. Small doses in gastric affections.—*L.* '97, ii. 404. In habitual constipation.—*L.* '97, ii. 932. Enemata containing 8 minims of Creosote in 4 oz. of Cod Liver Oil in pleuro-peritoneal tuberculosis in children.—*L.* '97, i. 159. In malarial enteric fever 15 minims rubbed into the axilla and covered up with cotton wool produced free perspiration and lowered the temperature.—*B.M.J.* '96, i. 18; '97, i. 1332; *I.M.G.* '96, 11; *T.G.* '96, 325.

Dose.—1 to 5 minims.

Prescribing Notes.—In pills made with Soap and Liquorice Powder (*see* p. 249) or in capsules. When given as a draught or mixture it is best emulsified with Mucilage of Acacia and given in Milk, or dissolved in Almond Oil; *see* 'Guttæ Creosoti' and 'Mistura Creosoti' (Squire). For Hypodermic injection, alone or dissolved in Almond Oil. When mixed with Magnesia it forms a tasteless compound insoluble in Water. Orange, Juniper, and Fluid Extract of Liquorice have been used as flavouring agents.

Incompatibles.—Silver salts.

Official Preparations.—Mistura Creosoti, Unguentum Creosoti.

Not Official.—Elixir Créosoté, Guttæ Creosoti, Mistura Creosoti (Squire), Pilula Creosoti, Creosote Carbonate, Creosote Valerianate, Creosote Phosphate, Creosote Tannate (*see* below). The preparations of Guaiacol will be found under that name.

Foreign Pharmacopœias.—Official in Austr. (Creosotum), Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex., Norw., Port., Russ., Span., Swiss and U.S.; not in Swed.

Description.—A colourless or yellowish highly refractive liquid having a strong empyreumatic odour and acrid taste; neutral or only faintly acid to Litmus. It is dissolved by about 150 parts of Water at ordinary temperatures, and is more soluble in hot Water. It is freely soluble in Alcohol (90 p.c.), Ether, Chloroform, Glycerin, and Glacial Acetic Acid.

Tests.—Sp. gr. not below 1.079. It distils between 392° F. (200° C.) and 428° F. (220° C.). A 1 p.c. solution in Alcohol (90 p.c.), or ½ p.c. solution in Water, with a drop of the Test-solution of Ferric Chloride yields a green coloration, rapidly changing to a reddish brown. It rotates the plane of a ray of polarised light to the left. Dropped on white filtering-paper, and exposed to a temperature of 212° F. (100° C.), it leaves no translucent stain (absence of less volatile liquids). It is miscible with an equal volume of Collodion without gelatinisation; and, when shaken with five times its bulk of

Solution of Ammonia, its volume should not be diminished materially (distinction from Phenol).

B.P. now requires a higher sp. gr. and gives limits of temperature between which it should distil. Creosote was stated in *B.P.* '85 to rotate a ray of polarised light to the right, and to the left in *B.P.* '98. We find that pure Guaiacol, pure Creosol, and most commercial samples of genuine Wood Tar Creosote, have no measurable effect whatever upon polarised light. In no case have we observed a rotation greater than + 2°.

The best differentiating test between Creosote and Phenols is the insolubility of the former in *diluted* Glycerin. Dilute 3 measures (sp. gr. 1.26) with 1 of Water, and agitate 1 volume of the Creosote sample with 3 volumes of the diluted Glycerin. When separation is complete, a diminution in the Creosote volume indicates roughly the soluble impurity. If the Glycerin layer be run off, the Coal-tar Acids may be extracted from it for examination, by shaking out with Chloroform, after dilution with Water.—*Allen*.

Preparations.

MISTURA CREOSOTI. CREOSOTE MIXTURE. (ALTERED.)

Creosote, 16 minims; Spirit of Juniper, 16 minims; Syrup, 1 fl. oz.; Distilled Water, a sufficient quantity. Shake the Creosote with 14 fl. oz. of the Distilled Water; add the Syrup and the Spirit of Juniper, and sufficient Distilled Water to produce 16 fl. oz. of the Mixture.

=(about 1 in 480).

Glacial Acetic Acid is now omitted.

Dose.— $\frac{1}{2}$ to 1 fl. oz.

UNGUENTUM CREOSOTI. CREOSOTE OINTMENT. (ALTERED.)

Creosote (by weight), 1; Hard Paraffin, 4; Soft Paraffin, white, 5. Melt the Hard and Soft Paraffins together; add the Creosote; stir until cold.

=(about 1 in 10).

Now made with Hard and Soft Paraffin in place of Simple Ointment.

Not Official.

ELIXIR CREOSOTE (Fr.).—Creosote, 15; Rum, 985; mix and filter.

GUTTE CREOSOTI (Squire).—Creosote, 16 minims; Mucilage of Acacia, 60 minims; Syrup of Orange, 1 fl. oz.; Water to 2 fl. oz.: mix the Creosote with the Mucilage and add the other ingredients. One or two teaspoonfuls for a dose in an ounce of milk.

MISTURA CREOSOTI (Squire).—Creosote, 16 minims; Almond Oil, $\frac{1}{2}$ fl. oz.; Syrup of Orange, 1 fl. oz., Powdered Gum Acacia, 1 $\frac{1}{2}$ drms., Water to 8 fl. oz. Dissolve the Creosote in the Oil, mix it with the Powdered Gum Acacia in a mortar; add all at once 3 fl. drms. of Water, and triturate until an emulsion is formed, then add the remainder of the Water and the Syrup of Orange. Dose.— $\frac{1}{2}$ to 1 fl. oz.

PILULA CREOSOTI.—Creosote, 12 minims; Curd Soap, in powder, 6 grains; Liquorice, in powder, 30 grains: mix and divide into 12 pills.

CREOSOTAL (CREOSOTE CARBONATE).—A viscid amber-coloured liquid nearly odourless and tasteless; insoluble in water. It is stated to contain 90 p.c. of Creosote, and to be free from the irritating effects of that substance.—*B.M.J.E.* '96, i. 15; *L.* '97, ii. 1472. One teaspoonful doses for adults, smaller doses for children.—*L.* '98, i. 222; this dose has been criticised and 5 drops three times daily recommended as preferable.—*L.* '98, i. 960.

CREOSOTE PHOSPHATE.—A dense oily substance, insoluble in water. Dose.—5 to 15 grains in capsules.

EOSOTE (CREOSOTE VALERIANATE).—A fluid distilling at 240° C. has been recommended as a substitute for Creosote on account of its freedom from corrosive and toxic properties. Commencing dose 3 grains, increasing to 6 or 9 grains three times a day, given in capsules.—*B.M.J.E.* '96, ii. 59.

TANNOSAL (CREOSOTE TANNATE).—A brown powder, soluble in water. Dose.—5 to 15 grains.

CRETA PRÆPARATA.

PREPARED CHALK.

Native Calcium Carbonate, freed from most of its impurities by elutriation.

Solubility.—Insoluble in Water, readily dissolved by weak acids.

Medicinal Properties.—It is astringent and antacid. Combined with other astringents and aromatics, it is used in infantile diarrhoea and in diarrhoea accompanied with acidity. One of the best antidotes for Oxalic Acid, the mineral acids, and Zinc Chloride. Used externally to burns, ulcers, and eczema, as a protective and desiccant.

Dose.—10 to 60 grains.

Prescribing Notes.—Generally given in the form of *Mistura Cretæ* with astringent Tinctures and Opium.

The *Pulvis Cretæ Aromaticus* is useful for administration to children, either in powder or in mixture with Mucilage.

Incompatibles.—All Acids and Sulphates.

Official Preparations.—*Mistura Cretæ*, *Pulvis Cretæ Aromaticus*, and *Pulvis Cretæ Aromaticus Cum Opio*. Contained in *Hydrargyrum cum Cretâ*.

Not Official.—Cholera Mixture and *Unguentum Cretæ*.

Foreign Pharmacopœias.—Official in Austr., Belg., Fr., Hung., Ital., Port., Russ., Span., Swed. and U.S.; not in the others.

Description.—White friable masses or a white powder yielding the reactions of Calcium and of Carbonates.

Tests.—It should yield only the slightest characteristic reactions with the tests for Iron, Aluminium, Magnesium, Phosphates, Sulphates, or Silica. Dissolved in Diluted Acetic Acid, the solution should yield no precipitate with Solution of Potassium Chromate (absence of Barium Carbonate).

Preparations.

MISTURA CRETÆ. CHALK MIXTURE. (MODIFIED.)

Prepared Chalk, $\frac{1}{2}$ oz.; Tragacanth, in powder, 15 grains; Refined Sugar, $\frac{1}{2}$ oz.; Cinnamon Water, a sufficient quantity. Triturate the Prepared Chalk with the Tragacanth and Refined Sugar, and gradually add sufficient Cinnamon Water to produce 8 fl. oz. of the Mixture.

=(about 1 in 32).

Tragacanth is now used in place of Gum Acacia and Sugar in place of Syrup.

Dose.— $\frac{1}{2}$ to 1 fl. oz.

Foreign Pharmacopœias.—Official in Port., Carbonate of Lime 3, Gum

Arabic 3, Syrup of Cinnamon 10, Water 84; U.S., Prepared Chalk 6, Acacia 4, Sugar 10, Cinnamon Water 40, Water to measure 100; not in the others.

PULVIS CRETÆ AROMATICUS. AROMATIC POWDER OF CHALK.
(ALTERED.)

Prepared Chalk, 11; Cinnamon, 4; Nutmeg, 3; Cloves, $1\frac{1}{2}$; Cardamom Seeds, 1; Refined Sugar, 25; all in powder: mix.
=(about 1 Chalk in $4\frac{1}{2}$).

Saffron is now omitted.

Dose.—10 to 60 grains.

PULVIS CRETÆ AROMATICUS CUM OPIO. AROMATIC POWDER OF CHALK WITH OPIUM.

Aromatic Powder of Chalk, 39; Opium, in powder, 1: mix.
=(1 Opium in 40).

This Powder contains $2\frac{1}{2}$ p.c. of Opium.

Dose.—10 to 40 grains.

Not Official.

CHOLERA MIXTURE.—Aromatic Powder (B.P. '64), 3 drm.; Spirit of Sal Volatile, 3 fl. drm.; Tincture of Catechu, 10 fl. drm.; Compound Tincture of Cardamoms, 6 fl. drm.; Tincture of Opium, 1 fl. drm.; Chalk Mixture to make 20 fl. oz. This mixture was proposed by the Board of Health during the prevalence of cholera, and is useful in cases of diarrhoea.

Dose.—1 fl. oz. for an adult, $\frac{1}{2}$ fl. oz. for a child twelve years old, $\frac{1}{4}$ fl. oz. for seven years old, after each liquid motion.

UNGUENTUM CRETÆ.—Prepared Chalk, 1; Spermaceti Ointment, 4: mix.

CROCUS.

SAFFRON.

The dried stigmas and tops of the styles of *Crocus sativus*.

Imported from Spain, France, and Italy.

Medicinal Properties.—Useful for giving colour and flavour to preparations.

Official Preparation.—Tinctura Croci. Used in the preparation of Decoctum Aloes Compositum and Tinctura Cinchonæ Composita.

Not Official.—Glycerinum Croci in place of Syrupus Croci.

Foreign Pharmacopœias.—Official in all; Fr., Safran; Ital., Zafferano; Mex., Azafran; Norw., Stigma Croci.

Description.—Each entire portion of commercial Saffron is an inch (twenty-five millimetres) or somewhat more in length, and consists of three orange-red stigmas, thickened and tubular above, jagged or notched at the upper extremities, and united below to the top of the yellow style. Saffron is flexible and unctuous to the touch, unless quite dry; it has a peculiar strong aromatic odour, and a bitter somewhat aromatic taste.

Tests.—Rubbed on the wet finger it leaves an intense orange-yellow tint. When pressed between folds of white filtering-paper it leaves no oily stain. When a small portion is placed in a glass of

warm Water it colours the liquid orange-yellow, becomes itself paler in colour, and does not deposit any white or coloured powder. Incinerated with free access of air, dried Saffron does not deflagrate (absence of Nitrates), and yields about 7 p.c. of ash. It should not lose more than 12.5 p.c. of moisture when dried at 212° F. (100° C.).

Concentrated Sulphuric Acid instantly changes its colour to indigo-blue, which soon disappears.

1 part of Saffron shaken with 100,000 parts of Water gives it a distinct yellow colour. Should lose not more than 14 p.c. when dried at 100° C. The dried Saffron should yield not more than 7.5 p.c. of ash. Ger. Ph.

A Paper on Detection of Adulterants.—*P.J.* (3) xxi. 612.

The purity of commercial Spanish Saffron.—*A.J.P.* '85, 487; '96, 198.

Adulteration of Saffron with the stamens.—*P.J.* (3) xxv. 644.

Tritonia aurea proposed as a substitute.—*P.J.* '96, i. 85.

Barium Sulphate in Saffron.—*P.J.* '97, i. 223, 257.

Preparation.

TINCTURA CROCI. TINCTURE OF SAFFRON. (MODIFIED.)

Saffron, 1; Alcohol (60 p.c.), 20. Prepare by the maceration process. = (1 in 20).

Now made with Alcohol (60 p.c.) in place of Proof Spirit.

Dose.—5 to 15 minims.

Foreign Pharmacopœias.—Official in Belg. and Span., 1 in 5 Dutch, Fr., Russ., Swiss and U.S., 1 in 10; all by weight except U.S.; not in the others.

Not Official.

GLYCERINUM CROCI.—Saffron 1; Glycerin 20; Alcohol (60 p.c.) 20; mix the Glycerin and the Alcohol, and digest in it the Saffron for an hour at a gentle heat, and filter. This is introduced as a substitute for **Syrupus Croci**, which deposits and loses its colour. The Syrup can be prepared by diluting 1 of Glycerinum with 7 of simple Syrup.

CROTONIS OLEUM.

CROTON OIL.

The Oil expressed from the seeds of *Croton Tiglium*.

A native of Hindostan, Ceylon, and the Moluccas.

100 parts of seed yield about 50 of Oil.

Solubility.—Soluble in Ether, Oil of Turpentine, and Olive Oil, partially soluble in Alcohol (90 p.c.).

B.P. 1898 still retains the sentence 'entirely soluble in Absolute Alcohol' although it has been repeatedly pointed out that this is not strictly the case. An oil recently expressed will dissolve the Absolute Alcohol up to equal parts, but when more than one volume of Alcohol is added to one of Oil the mixture becomes turbid, and with two volumes of Alcohol the mixture separates into two layers on standing. With a sample of oil two or three years old rather more Alcohol can be added without the mixture becoming turbid, but it is only a question of degree.

The solubility of Croton Oil in Absolute Alcohol appears to depend in great measure on the age of the Oil, and the greater or less freshness of the seeds from which it is expressed, as oxidised or resinified Oil dissolves more readily.—*P.J.* (2) xxiv. 382; (3) viii. 705; (3) xviii. 546.

The explanation of the above appears to be that the solubility of the Oil as a whole depends upon the proportion of free Acid, which is very soluble in Alcohol, and also carries the difficultly soluble neutral Glyceride into solution along with it.—*P.J.* (3) xx. 1060.

Croton Oil can be separated by Alcohol into two parts. The non-vesicating portion insoluble in Alcohol possesses the full purgative properties of the Oil in a less irritating form; the alcohol-soluble or vesicating portion had no purgative action in the same doses, but caused irritation and nausea.—*P.J.* (3) xiv. 446.

Medicinal Properties.—A powerful drastic cathartic, acting with great rapidity. Given in cases of intestinal obstruction from impacted feces, in dropsy, in apoplexy, in maniacal and unconscious patients and in eclampsia, its small dose being an advantage. Applied externally as a powerful counter-irritant in rheumatism, gout, neuralgia, and in acute laryngeal and pulmonary diseases in the form of **liniment**. Its external application is often followed by an eruption which becomes pustular.

Croton Oil must be given with great care, and is inadmissible in feeble subjects, in organic obstruction, and in inflammatory states of the stomach and intestines.—*Mitchell Bruce*.

5 minims to 1 fl. oz. of Olive Oil are used to promote the growth of hair.

Is an hepatic stimulant of very feeble power.—*Dr. Rutherford*.

Dose.— $\frac{1}{2}$ to 1 minim.

Prescribing Note.—In pill with Soap and Liquorice Powder (see p. 484), or in combination with Compound Extract of Colocynth.

Official Preparation.—Linimentum Crotonis.

Not Official.—Croton Oil Pencils.

Antidotes.—In case of an overdose an emetic should be at once administered, the stomach should be washed out with olive oil or milk, 4 fl. oz. to pint of water; mucilaginous fluids and Opium or Morphine should then be given to check the pain and enteritis.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex. (Aceite de Croton Tiglio), Norw., Port., Russ., Span. (Aceite de Grano Tiglii), Swed., Swiss and U.S.

Description.—Brownish-yellow to dark reddish-brown, viscid, with a disagreeable odour and an acrid burning taste. Entirely soluble in Absolute Alcohol. Freely soluble in Ether and Chloroform.

Isolation of 'Croton-Resin' the vesicating constituent, by the saponification of that part of Croton Oil which is soluble in strong Alcohol and fractional precipitation.—*P.J.* '95, ii. 5; *C.D.* '95, ii. 22; *J.C.S. Abs.* '95, i. 680.

Tests.—Sp. gr. .940 to .960. An Alcoholic Solution should not redden moistened Blue Litmus Paper. If to 2 c.c. 1 c.c. Fuming Nitric Acid and 1 of Water be added, and the mixture be shaken vigorously, it should not solidify, either completely or partially, but only thicken slightly, after standing for two days (absence of other non-drying Oils).

DETECTION OF CROTON OIL IN MIXTURES.—Shake the mixture with Alcoholic Potash; separate the alcoholic layer, add dilute acid, and distil off the spirit. Shake the residue with Ether, separate, and evaporate the solvent; the oil thus

obtained should produce the characteristic pustular eruption when applied to the skin.—*P.J.* (3) xviii. 547.

Preparation.

LINIMENTUM CROTONIS. LINIMENT OF CROTON OIL. (MODIFIED.)

Croton Oil, 1; Oil of Cajuput, $3\frac{1}{2}$; Alcohol (90 p.c.), $3\frac{1}{2}$: mix. = (1 in 8).

Now made with Alcohol (90 p.c.) in place of Rectified Spirit.
(Not in the other Pharmacopœias.)

Not Official.

CROTON OIL PENCILS.—Croton Oil 2, Cacao Butter 1, White Beeswax 1: melt together the last two in a water-bath, add the Oil, and when nearly cold pour into moulds.

CUBEBAE FRUCTUS.

CUBEBS.

The dried full-grown unripe fruits of *Piper Cubeba*.

Medicinal Properties.—Aromatic, stimulant, and antiseptic diuretic. Acts specially on the genito-urinary mucous membrane. Given in all stages of gonorrhœa, gleet, cystitis, pyelitis, and sometimes in chronic bronchitis. Frequently combined with Copaiba.

Dose.—30 to 60 grains.

Prescribing Notes.—The Powder is given in the above doses wrapped in moistened Wafer-paper, or in smaller doses in **cachets**. In **mixture** well rubbed down with Mucilage. A popular form of administration is the **paste**, made with an equal quantity of Copaiba, which may be taken in Wafer-paper. It is also made into a paste with Glycerin and various Syrups. For throat affections lozenges and Compressed Tablets are made.

The **Oil** is given in Capsules or suspended in Water with Mucilage.

For Inhalation the Oil may be used with or without the vapour of water.

Official Preparations.—Oleum Cubebæ and Tinctura Cubebæ.

Not Official.—Extractum Cubebæ Fluidum, Oleo-resina Cubebæ, Gossypium Cubebæ, Trochiscus Cubebæ, and Vapor Cubebæ.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital., Jap., Mex., Norw., Port., Russ., Span., Swed., Swiss and U.S.

Description.—Nearly globular, sometimes depressed at the base, about one-sixth of an inch (four millimetres) in diameter, greyish-brown or nearly black in colour. The pericarp is reticulately wrinkled, thin, brittle, and abruptly prolonged at the base into a slender rounded stalk, which is about one and a-half times the length of the globular portion, within which is a single seed attached by the base. A transverse section of the pericarp exhibits two layers of sclerenchymatous cells, one near the outer, the other near the inner surface, those of the latter being radially elongated. Odour strong, aromatic, and characteristic; taste warm, aromatic, and somewhat bitter.

Cubebin ($C_{20}H_{20}O_6$), is a crystalline substance which occurs in the pericarp as

well as the perisperm. It melts at 125° C., is coloured a reddish-purple by Sulphuric Acid, and in Chloroformic solution is levo-rotatory.—*J.C.S. Abs.* '96, i. 494.

Microscopical investigation of Cubebs and its adulterants.—*P.J.* (3) xxv. 314, 757, 797.

Test.—The crushed fruit imparts a crimson colour to Sulphuric Acid.

Preparations.

OLEUM CUBEBAE. OIL OF CUBEBS.

The Oil distilled from Cubebs.

The yield is about 10 p.c.

Solubility.—1 in 18 of Alcohol (90 p.c.), in all proportions of Absolute Alcohol.

Dose.—5 to 20 minims.

Foreign Pharmacopœias.—Official in Port., sp. gr. .929; Span. and U.S., sp. gr. about .920; not in the others.

Description.—Sp. gr. .910 to .930. Colourless, pale-green, or greenish-yellow; with the odour and camphoraceous taste of Cubebs.

TINCTURA CUBEBAE. TINCTURE OF CUBEBS. (ALTERED.)

Cubebs, in powder, 4; Alcohol (90 p.c.) a sufficient quantity. Moisten the powder with 2 of the Alcohol, and complete the percolation process. The resulting tincture should measure 20. =(1 in 5).

Now 1 in 5 instead of 1 in 8, and Alcohol (90 p.c.) used in place of Rectified Spirit.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

Foreign Pharmacopœias.—Official in Fr., 1 in 5, by weight; Mex., and U.S., 1 in 5; not in the others.

Not Official.

EXTRACTUM CUBEBAE FLUIDUM (U.S.).—Cubebs in No. 60 Powder, 100 grammes, percolated with Alcohol (94 p. c. by vol.) until the Cubebs are exhausted, reserve the first 90 c. c. of percolate, and evaporate the remainder to a soft extract, dissolve this in the reserved portion and add sufficient Alcohol to make 100 c. c.

Dose.—5 to 30 minims.

OLEO-RESINA CUBEBAE. Syn.—**EXTRACTUM CUBEBAE.** Percolate Cubebs in coarse powder with Ether, slowly, until the liquor passes colourless. Let the Ether evaporate from the liquor, at first spontaneously and then over a water-bath, or recover it by distillation; and transfer the residue to a closed vessel, letting it stand until waxy or crystalline matter ceases to be deposited. Decant the Oleo-Resin and preserve it in a well-stoppered bottle.

Dose.—5 to 30 minims.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Mex. (*Extracto Alcoholico de Cubebas*), Russ., Swiss and U.S.; not in the others.

GOSSYPIUM CUBEBAE (T.H.). Tincture of Cubebs 1 fl. oz., Glycerin 10 minims, Cotton Wool in a thin sheet 60 grains. Mix the Tincture and Glycerin, and saturate the wool evenly with the mixture. Dry by exposure to the air. Useful in catarrh with excessive secretion.

TROCHISCUS CUBEBAE (T.H.). Each lozenge contains about $\frac{1}{2}$ grain of Cubebs.

VAPOR CUBEBAE (T.H.). Oil of Cubebs, 40 minims, Light Magnesium Carbonate, 20 grains, water to 1 fl. oz. Mix. A teaspoonful in a pint of water at 140° F. for each inhalation.

Not Official.

CUPRI SUBACETAS.

Syn.—ÆRUGO. VERDIGRIS.

Pale green powder or masses, partly crystalline.

When treated with Water about 50 p.c. dissolves as Copper Acetate, leaving an insoluble basic Acetate.

Medicinal Properties.—Used as a stimulant to foul and indolent ulcers, also as an escharotic.

Foreign Pharmacopœias.—Official in Belg., Dan., Fr., Mex. (Acetato de Cobre bibásico), Port. and Span. (Cardenillo); not in the others.

Preparation.

LINIMENTUM ÆRUGINIS (P.L.).—Made by dissolving Verdigris 1, in Vinegar 7, adding Honey 14, and boiling down to a proper consistence.

This preparation, with different proportions, also occurs in Belg., Fr., Ital., Port., Span and Swiss. Most of them direct that the preparation shall be boiled until it assumes a red colour, which indicates that the Cupric Acetate has been reduced to a Cuprous compound.

CUPRI ACETAS.—Deep green, prismatic crystals.

Solubility.—1 in 15 of Water, 1 in 300 of Alcohol (90 p.c.), 1 in 112 of Glycerin.

Medicinal Properties.—Similar to the Subacetate, but more definite when required for solution in Water.

Foreign Pharmacopœias.—Official in Ital., Swed. and Swiss; not in the others.

CUPRI SULPHAS.

COPPER SULPHATE.

B.P.Syn.—CUPRIC SULPHATE.

$\text{CuSO}_4, 5\text{H}_2\text{O}$, eq. 247·86.

The salt may be obtained by the interaction of Water, Sulphuric Acid, and Copper or Cupric Oxide.

When rendered anhydrous by heating, the powder is white.

Solubility.—1 in $3\frac{1}{2}$ of Water, 2 in 1 of Water (at 212° F.); insoluble in Alcohol (90 p.c.); 1 in $2\frac{1}{2}$ of Glycerin.

Medicinal Properties.—Astringent, prompt emetic, escharotic. Recommended in chronic diarrhœa, especially that of phthisis. Externally, as a styptic for bleeding surfaces and a stimulant to ulcers, as an escharotic for warts, &c. For **lotions**, in proportions from 2 to 4 grains to 1 oz.; also 8 grains to 1 oz. for prurigo. As an astringent **injection** to diminish excessive secretion from mucous membranes, especially in cases of leucorrhœa and gonorrhœa. For urethral **injections**, 1 to 4 grains in an ounce of Water. It is also used 1 to 2 grains to 1 oz. in granular conjunctivitis and various affections of the eyes when astringent applications are required. Also in some skin affections.

An antidote in Phosphorus poisoning—3 grains every few minutes till vomiting is produced.—*Mitchell Bruce.*

Copper Sulphate 10 grains, Tincture of Opium 60 minims, Water 4 fl. oz. This was used as a rectal injection in a bad case of dysentery.—*L.* '89, ii. 739.

Dose.—As an astringent, $\frac{1}{2}$ to 2 grains; as an emetic 5 to 10 grains.

Prescribing Notes.—Best given in form of pill. A good pill is prepared by adding $\frac{1}{2}$ of Pulvis Tragacanthæ Compositus and Dispensing Syrup, q.s.; varnish if required.

Incompatibles.—Alkalis and their Carbonates, Lime Water, Iodides, and most vegetable astringents.

Not Official.—Guttæ Cupri Sulphatis, Cupri Oleas, Unguentum Cupri Oleatis, Lapis Divinus (Cuprum Aluminatum) and Pavy's Solution.

Antidotes.—In case of poisoning by Copper Sulphate, Albumen or White of Egg is the best antidote; the stomach should then be washed out, demulcent drinks given, followed by Laudanum internally or Morphine hypodermically, and Linseed Meal poultices applied to the abdomen.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Fr., Ger., Hung., Ital. (Solfato di Rame), Jap., Mex. (Sulfato de Cobre), Norw., Port., Russ., Span., Swed., Swiss and U.S.

Description.—Blue triclinic prisms, soluble in 3.5 parts of cold Water, forming a solution which strongly reddens Litmus.

Tests.—It affords the reactions of Copper and of Sulphates. It should yield no characteristic reaction with the tests for Lead, Arsenium, Zinc, or Aluminium, and not more than the slightest reactions with the tests for Iron.

Not Official.

GUTTÆ CUPRI SULPHATIS (*L.O.H.*).—Copper Sulphate, 2 grains; Water to 1 fl. oz.—The strength in use at the principal Hospitals.

CUPRI OLEAS.—Dissolve 180 grains of Copper Sulphate in 20 fl. oz. of Distilled Water, then add 20 fl. oz. of Solution of Sodium Oleate; heat till the precipitate melts and agglomerates, wash once or twice with boiling Water, collect and dry. When prepared from concentrated solutions it is much more difficult to free from Soap and adhering salts.

When prepared from Castile Soap, it is very soft and sticky at 130° F. and melts to a clear blue liquid at 160° F., but when prepared from a pure Oleic Acid Soap, it softens and melts about 20 degrees lower.

Has also been made by heating Oleic Acid with excess of freshly precipitated Copper Carbonate, freeing from Water, dissolving in Petroleum Spirit, and evaporation. Made in this way it is a hard, brittle solid, melting at 167° C.—*P.J.* (3) xxii. 1009.

Medicinal Properties.—It is an excellent antiseptic and antiparasitic agent. When diluted it is especially useful in ringworm.

UNGUENTUM CUPRI OLEATIS.—Copper Oleate, 1; Lard, 4: melt together, and stir till cold.

Useful in ringworm, hard and horny warts, corns, and bunions.—*B.M.J.* '84, ii. 752.

LAPIS DIVINUS. CUPRUM ALUMINATUM.—Copper Sulphate, Potassium Nitrate, and Alum, of each equal parts, in powder, fused in a glazed earthen crucible, powdered Camphor, to the extent of $\frac{1}{10}$ th part of the whole, being added near the end of the process. When cold, break in pieces and keep in a closely stoppered bottle. An **eye-wash** may be made by dissolving 2 grains in an ounce of distilled Water.

Foreign Pharmacopœias.—Official in Belg., Dan., Dutch, Fr. (Pierre Divine), Ger., Hung., Jap., Russ., Span., Swed. and Swiss; not in the others.

FEHLING'S SOLUTION. See Appendix.

PAVY'S SOLUTION.—Crystallised Copper Sulphate, 34.65 grammes; Rochelle Salt, 170 grammes; Potassium Hydroxide, 170 grammes; Water to 1000 c.c.

When 120 c.c. of this Solution are mixed with 400 c.c. of Ammonia (sp. gr. .880) and diluted to 1,000 c.c., then 10 c.c. may be taken as equivalent to .005 grammes of Glucose.

The method is well adapted for the examination of Diabetic Urine and Milk, also mixtures of Milk and Cane Sugars, and certainly has the advantage over the ordinary Fehling method by its definite end reaction.—*Sutton*.

Not Official.

CURARA—WOORARA.

A powerful poison obtained from various species of *Strychnos*, and used by the Indians in the Northern part of South America for arming the points of their arrows. A brownish black shining brittle resinous mass almost wholly soluble in Water, sparingly soluble in Absolute Alcohol. Different samples vary very much in strength, so that the dose of every parcel has to be arrived at by experiment. It is only used **hypodermically**, and the **solution** 1 grain in 12 minims given in former editions of the *Companion* is included in B.P.C. Formulary. An Alkaloid **Curarine** has been obtained from Curara.

Arrow Poisons: Their history, sources, and constituents.—(*Stockman*) *P.J.* '98, ii. 548, 585.

Medicinal Properties.—It has been used in the treatment of hydrophobia and chorea. 'It has been given successfully in tetanus, and is probably the most useful of all the drugs employed for this very fatal disease.'

It is not poisonous when swallowed, but is strongly toxic when injected under the skin.—*Ringer*.

Dose.— $\frac{1}{12}$ th to $\frac{1}{2}$ grain, but should be used with great care.

Foreign Pharmacopœias.—Official in Fr., Mex. (Curaro) and Span.; not in the others.

Preparation.

INJECTIO CURARÆ HYPODERMICA (B.P.C.).—Curare 5 grains; powder and make it into a paste with Distilled Water; transfer to a funnel plugged with absorbent wool, and gradually pour upon it Distilled Water until one fluid drachm is obtained. If the injection be required in haste, rub the Curare with 60 minims of Distilled Water, throw on a filter, and when it ceases to drop, pour over the contents of the filter sufficient Distilled Water to produce one fluid drachm.

Dose.—1 to 6 minims.

CUSPARIÆ CORTEX.

CUSPARIA BARK.

The dried bark of *Cusparia febrifuga*.

The alkaloids, **Cusparine** and **Galipeine**, have been extracted from Cusparia Bark. Cusparine Sulphate and Hydrochloride are slightly soluble in Water, the Acetate and Tartrate much more so.—*P.J.* (3) xiv. 423; reactions of Cusparine and description of its salts.—*J.C.S. Abs.* '96, i. 66; contains about 1.5 p.c. of ethereal oil.—*J.C.S. Abs.* '98, i. 37.

Medicinal Properties.—An aromatic bitter tonic. In South America it is given for malarial fever.

Prescribing Notes.—Given in the form of the Infusion or the Concentrated Liquor, generally combined with Aromatics to prevent nausea.

Official Preparations.—Infusum Cuspariæ and Liquor Cuspariæ Concentratus.

Foreign Pharmacopœias.—Official in Belg., Fr., Mex. (Angostura Verdadera) Port. and Span. (Angostura), not in the others.

Description.—Occurs in flattened or curved pieces, or in quills, generally about four or five inches (ten or twelve centimetres) long, an inch (twenty-five millimetres) wide, and one-twelfth of an inch (two millimetres) thick. The outer layer usually consists of a grey or yellowish cork which is often soft and easily removed, disclosing a hard, dark-brown inner layer; the inner surface is light-brown and frequently laminated. The fracture is short and resinous; on the fractured surface many white points are visible. A transverse section exhibits numerous cells filled with acicular crystals of Calcium Oxalate and small oil glands, but seldom any sclerenchymatous tissue other than small isolated groups of bast fibres. Odour, musty; taste, bitter.

Preparations.

INFUSUM CUSPARIÆ. INFUSION OF CUSPARIA. (ALTERED).

Cusparia Bark, in No. 20 powder, 1; Distilled Water, boiling, 20: infuse in a covered vessel for fifteen minutes; strain.

Boiling Water now used and time reduced one-fourth. = (1 in 20).

Dose.—1 to 2 fl. oz.

Incompatibles.—Mineral Acids, Ferric Chloride, and other metallic salts.

(Not in the other Pharmacopœias).

LIQUOR CUSPARIÆ CONCENTRATUS. CONCENTRATED SOLUTION OF CUSPARIA. (NEW.)

Cusparia Bark, in No. 40 powder, 10; Alcohol (20 p.c.), 25, or a sufficient quantity. Moisten the Cusparia with 5 of the Alcohol; pack in a closed percolator; set aside for three days; percolate with the remaining Alcohol, added in ten equal portions at intervals of twelve hours; continue percolation with more Alcohol until the product measures 20.

Dose.— $\frac{1}{2}$ to 1 fl. drm.

CUSSO.

KOUSSO.

The dried panicles of pistillate flowers of *Brayera anthelmintica*.

Obtained from Abyssinia.

Medicinal Properties.—Anthelmintic. Especially useful for the different kinds of tapeworm. Should be followed by a purgative to expel the dead worm.

Dose.— $\frac{1}{4}$ to $\frac{1}{2}$ oz.

Prescribing Notes.—The Flowers, in coarse powder, are mixed with half a pint of warm Water, allowed to stand for 15 minutes, stirred up (not strained), and

taken in 2 or 3 draughts at short intervals. It should be taken in the morning on an empty stomach, the bowels having previously acted. After 3 or 4 hours a brisk purgative should be administered. On account of its liability to produce nausea a little Lemonade may be taken afterwards.

Foreign Pharmacopœias.—Official in Austr., Dutch, Ger. and Russ., Koso; Belg., Fr. and Port., Couso; Ital., Kouso; Jap., Flores Koso; Dan., Hung., and Swed., Kusso; Mex., Cuso; Norw., Flos Koso; Span., Couso; Swiss, Kosso; U.S., Cusso.

The Infusion is Official in Fr. (Apozème de Couso) about 1 in 8; Span. (Inf. de Couso), 1 in 11½.

Description.—Usually in more or less cylindrical rolls, from one to two feet (three to six decimetres) in length, composed of reddish panicles of pistillate flowers. The panicles are much branched, the branches arising from the axils of large sheathing bracts; they are more or less covered with hairs and glands. Flowers numerous, small, shortly stalked, mostly unisexual, with two roundish membranous veined bracts at the base of each. The calyx has reddish veins, is hairy externally, and consists of two alternating whorls each of five segments, the inner whorl being curved inwards over the young fruit and shrivelled. No marked odour; taste bitter and acrid.

Not Official.

CYDONIUM.

QUINCE SEED.

The seeds of *Pyrus Cydonia*.

Their coriaceous envelope abounds in mucilage.

Medicinal Properties.—Demulcent. The decoction is used externally for cracks in the skin. A nice adjunct to eye-lotions in cases of irritation and inflammation.

Foreign Pharmacopœias.—Official in Austr., Belg., Dutch, Fr. (Coing), Port. (Marmelo), Russ., Mex. and Span. (Membrillo), Swed. and Swiss; not in the others.

Preparations.

DECOCTUM CYDONII.—Quince Seed, 1; Distilled Water, 80; boil for ten minutes, and strain.

MUCILAGO CYDONII, by cold maceration.—Austr., 1 in 25; Belg. and Port., 1 in 100; Norw., Russ., Swed. and Swiss, 1 in 50; Fr., 1 in 10; Span., 1 in 46.

Not Official.

DAMIANA.

The leaves of one or more species of *Turnera*, from Mexico and California.

Contains a bitter substance, resins, and a volatile oil.

Medicinal Properties.—Tonic, diuretic, and aphrodisiac.

Prescribing Notes.—Frequently given in the form of Pill; the Hard Extract makes a good pill with a small quantity of Alcohol (90 p.c.), the Soft Extract is best hardened with the powdered Leaves.