RENALINE.—A greyish-white crystalline powder, only slightly soluble in cold Water, more readily soluble in warm Water. It gradually darkens in colour when exposed to the air and light. It forms definite salts with the Acids; the chief salt being Hydrochloride. It is also sold in the form of a 1 in 1000 solution and in glass capsules containing 1, 2 and 5 c.c. of a sterilised solution (1 in 1000, 1 in 2000, or 1 in 10,000).

NEBULA EXTRACTI SUPRARENALIS.—Suprarenal Extract, 48 grains; Sodium Sulphate, 10 grains; Boiling Distilled Water, to 1 fl. oz. = 10 p.c. solution.—*Central Throat.*

SUPRARENAL OINTMENT.—Liquid Extract of Suprarenal Gland, 50 minims; Liquid Paraffin, 2 drm.; Hydrous Wool Fat, to 1 oz. It may be scented with Otto of Rose.—*Martindale.*

Unguentum Suprarenalis.—Liquid Extract of Suprarenals, 10; Liquid Paraffin, 25; Hydrous Wool Fat, *q.s.* to produce 100. This ointment is sometimes perfumed with Otto of Rose.—*B.P.C.*

Not Official.

SYRUPI.

Syrups are apt to ferment or become mouldy when made with too little Sugar, and to crystallise when too concentrated, or when mixed with Acids or Alcohol. There is no uniformity in the method given in *B.P.* for the 22 Syrups which are official. In 7 of them the final product is directed to be made to a given volume by the addition of Water or of Syrup, and in 3 of them to a given weight. The sp. gr. is mentioned in 2 of them, Syrupus, and Syrupus Ferri Iodidi. In the case of Syrupus Sennæ and Syrupus Tolutanus, the fluid is made up to a given volume by the addition of Distilled Water before the Sugar is dissolved in it, but in Syrupus Hemidesmi and Syrupus Rosæ no such precaution is taken. Syrupus Aurantii and Syrupus Zingiberis are both mixtures of a Tincture with Syrup, but the latter is made up to a definite volume, the former is not.

Not Official.

TABACI FOLIA.

LEAF TOBACCO.

The dried Leaves of the Virginian Tobacco, *Nicotiana Tabacum*, L.

Official in *B.P.* '85, but now omitted.

When dry they yield about 20 p.c. of ash, containing a large proportion of Potassium Carbonate.

The Virginian leaf contains about 6 p.c. of **Nicotine**, and is one of the strongest varieties of Tobacco.

Medicinal Properties.—A powerful depressant, especially affecting the heart and respiration. Smoked, it is sedative and antispasmodic in various cases of asthma. Occasionally used as snuff for its errhine action, increasing the flow of nasal mucus.

It forms the basis of a proprietary article for the relief of neuralgia of the face.

Nicotine is one of the most powerful and rapid poisons known.

Smoke from both tobacco and hay found to be bactericidal to pathogenic bacteria.—*L.* '07, i. 1220.

Tobacco-juice (a strong infusion) is a powerful insecticide, but some preparations for this purpose contain Arsenic in addition to the Tobacco, and in a case that came under our notice, several animals were killed by the Arsenic.

Antidotes.—In case Tobacco has been swallowed, an emetic; stimulant, internal and external. Recumbent position; Tannic Acid; Nux Vomica or Strychnine.

Official in Ger., Mex., Port. and Span., Folia Nicotiana.

Enema Tabaci.—Leaf Tobacco, 20 grains; Boiling Water, 8 fl. oz.—*B.P.* 1867; omitted in *B.P.* 1885 and 1898, now included in the *B.P.C.* with a note that it is rarely used.

NICOTINA ($C_{10}H_{14}N_2$, eq. 160·98).—A nearly colourless, volatile, oily liquid, with an acrid, burning taste, inflammable, miscible with Water, Ether, Alcohol, and the fixed Oils. It should be kept in well-stoppered glass bottles of a dark amber tint in a cool atmosphere and exposed as little as possible to contact with air and light, as it has a tendency to become darker in colour and to resinify. To this alkaloid Tobacco owes its activity. The most easily crystallised salt is the Acid Tartrate. Nicotine is intensely poisonous, and is seldom, if ever, used therapeutically.

The antidotal action of Strychnine, Eserine and the cruciferous plant *Nasturtium officinale*, to Nicotine has been compared, the result being that the expressed juice of *Nasturtium officinale* is claimed (*L.* '05, i. 1596) to be *par excellence* the antidote to Nicotine.

When injected intravenously Nicotine causes (*L.* '05, i. 851) a tremendous increase in the blood pressure. Its effects, however, are transient, the pressure falling to or even below the normal after a few minutes.

Tests.—Nicotine has a sp. gr. of 1·011. It boils at about 250° C. (482° F.). It possesses a strong alkaline reaction towards red Litmus. It is powerfully lævogyrate. It may be determined in aqueous solution in the absence of other free bases by direct titration with Tenth-normal Volumetric Sulphuric Acid Solution, using Methyl Orange Solution as an indicator of neutrality. 1 c.c. of Tenth-normal Volumetric Acid Solution being equivalent to 0·016098 gramme of pure Nicotine. Nicotine is precipitated by the usual alkaloidal reagents, *e.g.*, Potassio-mercuric Iodide (Mayer's) Solution, Iodo-Potassium Iodide (Wagner's) Solution, etc. The distinctive reactions by which it may be identified are the formation of a yellow amorphous precipitate rapidly becoming crystalline, on the addition of Picric Acid Solution in excess to a solution of Nicotine, or of a Nicotine salt; by the formation of a yellow crystalline precipitate soluble in hot Water, on the addition of Platinic Chloride Solution to a solution of Nicotine in dilute Hydrochloric Acid; by the formation of a crystalline precipitate on the addition of Mercuric Chloride Solution to an aqueous solution of Nicotine, the precipitate being soluble in diluted Hydrochloric Acid or in Acetic Acid. The appearance of this precipitate under the microscope is distinctive. Nicotine distils in the vapour of steam.

NICOTINÆ SALICYLAS (Eudermol).—Colourless, transparent crystals, or a white, crystalline powder, possessing a faint empyreumatic odour. It is soluble in Water and in Alcohol (90 p.c.). It has been introduced as a remedy for scabies, used in the form of a 1 p.c. ointment made with Vaseline or Lanolin.—*B.M.J.E.* '99, ii. 47; *P.J.* '99, i. 227.

Tests.—Nicotine Salicylate dissolves readily in Water, forming a clear solution which is faintly acid in reaction towards blue Litmus paper. It answers the tests distinctive of Nicotine given under the heading of Nicotina. A concentrated aqueous solution, when acidified with Diluted Sulphuric Acid, yields a white precipitate soluble in Ether. If the precipitated acid be separated, washed free from mineral acid, and carefully dried, it should possess the m.p. and answer the tests distinctive of Salicylic Acid given under Acidum Salicylicum.

Not Official.

TABELLÆ.

TABLETS.

The tablet is one of the most popular forms for the administration of drugs. Tablets of comparatively high finish can be made extemporaneously at the dispensing counter with care in manipulation and due regard to the composition of the drugs to be compressed. Tablets may be machine-made when it is required

to turn them out in a polished coherent state, using as little pressure as necessary for that purpose, or in the form of tablet triturates, which are generally moulded by hand.

For the compounding of Compressed Tablets, Messrs. E. White and R. A. Robinson, Jun., suggested (*C.D.* '02, 271, 299; *P.J.* '02, 140, 172) a mixture of Oil of Theobroma 1, and Starch 3 parts, the Oil being melted and the Starch powder stirred in before cooling; of this mixture 1 part is added to each 4 parts of the powder to be compressed, unless much Sugar be present, when more of the powder is required; it is mixed thoroughly without pressure in a mortar, divided into doses, and each dose compressed. This method is excellent for small quantities of tablets, facilitating the compression, and as a white excipient it is an advantage; the mixture of medicament with the Starch-Theobroma excipient should be quite cold before beginning the compression, otherwise it has a tendency to adhere to the parts of the machine and cause trouble. Subsequently Messrs. E. White and H. Rodwell found on further experience (*C.D.* '03, ii. 231; *P.J.* '03, ii. 156, 211) that the Theobroma and Starch excipient is not applicable on a large scale by means of machines with an automatic feed arrangement, except in certain cases where the mixture of substance and excipient happens to form a fairly granular powder capable of flowing evenly and uniformly from the hopper to the die. They have experimented with the object of removing that defect and to devise a method by which, when the tablets are crushed between the fingers or between paper, a soft and smooth powder could be produced. The problem resolved itself into the possibility of devising methods by which the Oil of Theobroma could be uniformly distributed throughout the material to be compressed, forming at the same time a granulated product capable of automatic feeding and compression into a coherent polished tablet with the minimum of force. They recommended the two methods here given.

Method I.—Theobroma Emulsion.

Oil of Theobroma 25, Hard Soap 5, Tragacanth 0·5, Benzoic Acid 0·25, Water to 100. Dissolve the Soap in 25 parts of Water by heat, add the hot solution to the melted Theobroma, and mix by whisking or agitation; shake in the Tragacanth, add the Benzoic Acid, then the remainder of the Water.

Gum Acacia may be used in place of Soap without making any appreciable difference in the general utility of the product. The product in either case should be a thick, smooth, white cream, free from lumps. The addition of Benzoic Acid is only necessary as an antiseptic precaution if the product be kept in stock.

The method of application is as follows:—The substance to be compressed, in the finest possible powder, should be triturated with sufficient of the emulsion to form a damp coherent powder—just so damp that it can be shaken through a No. 20 or 30 sieve without pressure and without adhering to the meshes. The sifted product, after exposure to the air for a few hours, or during the night, is ready for compression. If the drying process be accelerated by the aid of artificial heat, the dried product must be allowed to stand for an hour or two at least for the Theobroma to solidify before compression is attempted, but in the majority of cases it is better to avoid the use of artificial heat.

If the bulk of substance to be compressed in each tablet either demands or allows the addition of any diluting material, cane sugar is best; in no case does it interfere with the production of a good tablet. When the substance to be compressed is of a dusty nature, and has little tendency to cohere on compression, the addition of a little Glucose is advantageous, the tablet having a better finish and less liability to crack after compression.

Method II.—Ether-Alcohol Solution of Theobroma.

Oil of Theobroma 1 oz., Ether to 6 oz. Dissolve and add an equal volume of Rectified Spirit as required for use.

The manner of granulating with the above is to add it to the substance or mixture contained in a mortar, trituration being accomplished as quickly as possible, the whole of the solution required being added at once. The mass is then passed through a No. 20 or 30 sieve and allowed to dry by exposure.

Compression can, in some cases, be proceeded with almost immediately, but it will be found more satisfactory generally to allow the mixture to stand for an hour or two. Sugar granulates remarkably well with the above excipient, and the previous remarks on its addition apply here as well.

Not Official.

TALC.

CRÆTA GALLICA, FRENCH CHALK, SOAPSTONE.

A white, or almost white, impalpable powder, or in greyish irregular masses, possessing a waxy lustre. It has a characteristic saponaceous feeling to the skin, is practically odourless and tasteless. It is a hydrated Magnesium Silicate. It is insoluble in Water, insoluble in dilute acids, and in dilute solutions of alkali Hydroxides.

Foreign Pharmacopœias.—Official in Fr., Ger., Swiss and U.S.

Tests.—Talc has a sp. gr. of about 2·5. When fused with a mixture of anhydrous Sodium and Potassium Carbonates it leaves a residue which, dissolved in hot Water, filtered, the filtrate acidified with Hydrochloric Acid, evaporated to dryness, reacidified with Hydrochloric Acid, again evaporated to dryness, treated with Water and filtered, leaves on the filter an insoluble residue of Silica; when sufficient Ammonium Chloride is added to the filtrate to hold the Magnesium in solution, it yields on the addition of Ammonia Solution a white gelatinous precipitate, indicating the presence of Aluminium, and if this precipitate be removed by filtration, the filtrate affords on the addition of Sodium Phosphate Solution a white crystalline precipitate, indicating the presence of Magnesium. The Talc should not contain more than 5 p.c. of matter soluble in Diluted Hydrochloric Acid, as determined by boiling a weighed quantity of 1 gramme for 30 minutes with 25 c.c. of Diluted Hydrochloric Acid, maintaining the volume by the addition of Water from time to time, filtering and evaporating the filtrate to dryness, igniting and rapidly weighing.

PURIFIED TALC.—A white, or almost white, inodorous, impalpable powder, insoluble in Water, insoluble in dilute mineral acids and insoluble in dilute solutions of the alkali Hydroxides. It is obtained from native Talc by removing the matter soluble in Hydrochloric Acid by repeatedly boiling with a mixture of Hydrochloric Acid and Water, the purified product being washed with Water until a portion of the wash Water is neutral to Litmus, and yields no opalescence with Silver Nitrate Solution, after acidification with Nitric Acid. It is dried at 110° C. (230° F.).

Medicinal Properties.—It is employed as a soothing and protecting powder to the skin and is an ingredient in many 'dusting powders' and 'face powders.' It is also employed as a filtering medium to clarify turbid liquids.

Foreign Pharmacopœias.—Official in the U.S.P. It also appears in the *B.P. Appendix*.

Tests.—Purified Talc, when fused with a mixture of anhydrous Sodium and Potassium Carbonates, should answer the corresponding tests given under Talc. The soluble matter should not amount to more than 0·05 p.c. as determined by boiling 10 grammes of the purified Talc for 30 minutes with 50 c.c. of Water, maintaining the volume by the addition of Water from time to time, filtrating and evaporating one half the filtrate to dryness. The remaining half, when acidified with Hydrochloric Acid, should yield no blue colour on the addition of Potassium Ferrocyanide Solution, indicating the absence of Iron. When ignited at a dull red heat it should leave a residue amounting to not less than 95 p.c.

BORATED TALC.—Boric Acid, in fine powder, 10, Purified Talc 90.

TAMARINDUS.

TAMARINDS.

Fr., Tamarin; Ger., Tamarindenmus; Ital., Tamarindo; Span., Tamarindo.

The Fruits of *Tamarindus Indica*, L., freed from the brittle outer part of the pericarp and preserved with Sugar.

Imported from the West Indies.

Medicinal Properties.—Refrigerant and slightly laxative. Infused with Water, forms a cooling drink in febrile affections; it may also be given with Milk to form **Tamarind Whey** (1 Pulp in 40).

Dose.—$\frac{1}{4}$ oz. = 7·1 grammes and upwards.

Official Preparation.—Contained in Confectio Sennæ.

Official in all the Foreign Pharmacopœias except Dan.; Fr. and Ger. (a crude and a strained).

Descriptive Notes.—The Tamarinds of commerce consist of the fruit deprived of its hard epicarp, and are imported in three forms, viz., West Indian, preserved in Syrup and packed in barrels; East Indian, deprived of the epicarp and pressed into loose masses; and Egyptian, pressed into hard circular flattened cakes, 4 to 8 in. (10 to 20 cm.) in diameter and 1 to 2 in. (25 to 50 mm.) thick. The pulpy part consists of the mesocarp; the leathery endocarp encloses the seeds. Judging from the official description, the West Indian Tamarinds are apparently intended to be used; the pulp should not yield any characteristic reaction for Copper with the test for that metal, which is only likely to be present in the West Indian Tamarinds. The cheaper Egyptian Tamarinds are said to be used for curries and sauces, and in the manufacture of tobacco. On the Continent East Indian Tamarinds are the kind principally used in pharmacy.

Tests.—Tamarinds contain an amount of acid equal to about 10 p.c. calculated as Tartaric Acid. In the event of Copper vessels being used, Tamarinds are liable to take up this metal.

TARAXACI RADIX.

TARAXACUM ROOT.

Fr., Pissenlit; Ger., Löwenzahn; Ital., Tarassaco
Span., Hoja de Taraxacón.

The fresh and the dried Roots of *Taraxacum officinale*, Wiggers.

It is officially required to be collected in the autumn, but the root is best in the very late autumn or winter months, or in the early spring.

Medicinal Properties.—A mild laxative and bitter tonic, given in atonic dyspepsia with habitual constipation.

Official Preparations.—Extractum Taraxaci, Extractum Taraxaci Liquidum, and Succus Taraxaci.

Not Official.—Decoctum Taraxaci, Elixir Taraxaci Compositum, Liquor Taraxaci.

Foreign Pharmacopœias.—Official in all except Belg., Dan., Dutch and Norw.; Fr. (Pissenlit); Ital. (Tarassaco); Mex. (Diente de Leon).

Descriptive Notes.—Taraxacum or Dandelion Root varies in size according to age, from 8 to 12 in. (20 to 30 cm.) long, and from ½ to 1 in. (12·5 to 25 mm.) in diameter, and is sometimes branched in the upper portion, due to the original crown of the root being drawn into the earth and giving off lateral buds which form rootstocks. Externally the root is pale brown when fresh, but darker brown when dry, with a short fracture showing a thick white cortex, having numerous translucent concentric rings containing laticiferous vessels, and a yellow porous woody centre.

The root, both fresh and dried, is official, and is directed to be collected in the autumn. The *P.G.* directs the whole plant to be collected in spring before flowering. The juice of the root quickly undergoes alteration on exposure to the air. The dried root is much attacked by insects, and should not be kept more than a year. The roasted root is used to form Dandelion Coffee.

Tests.—Taraxacum Root contains from 4 to 5 p.c. of ash.

Preparations.

EXTRACTUM TARAXACI. Extract of Taraxacum.

Crush fresh Taraxacum Root; press out the juice; allow the feculence to subside; heat the liquid to 212° F. (100° C.), and maintain the temperature for 10 minutes; strain; evaporate to the consistence of a soft extract.

Dose.—5 to 15 grains = 0·32 to 1 gramme.

Official in Ital. and U.S., from **fresh root**; Fr., from **dried leaves**; Austr., Dutch., Hung., Port., Russ. and Swed., from **whole plant**; Ger. and Jap., from **dried root**; Mex., from **root and leaves.**

EXTRACTUM TARAXACI LIQUIDUM. Liquid Extract of Taraxacum.

Macerate 20 of dried Taraxacum Root (in No. 20 powder) in 40 of Alcohol (60 p.c.) for 48 hours; press out 10 of liquid; add to the pressed residue 40 of Distilled Water; macerate for 48 hours, press out the liquid, strain and evaporate to 10; mix this with the former 10 to make the total measure 20; filter.

When made in this way it deposits greatly. A much better Fluid Extract is made by percolation with Alcohol (30 p.c.).

Dose.—½ to 2 fl. drm. = 1·8 to 7·1 c.c.

Foreign Pharmacopœias.—Official in Russ. and U.S.

Tests.—Liquid Extract of Taraxacum has a sp. gr. of 1·040 to 1·060; it contains from 16 to 25 p.c. w/v of total solids and about 25 p.c. w/v of Absolute Alcohol.

SUCCUS TARAXACI. Juice of Taraxacum.

3 of the expressed Juice from bruised fresh Taraxacum Root, mixed with 1 of Alcohol (90 p.c.); after 7 days, filter.

Dose.—1 to 2 fl. drm. = 3·6 to 7·1 c.c.

Not Official.

DECOCTUM TARAXACI.—Dried Dandelion Root, 1; Distilled Water, *q.s.* to produce 20, after boiling for 10 minutes and straining.—*B.P.* 1885.

This has been incorporated in the *B.P.C.*

ELIXIR TARAXACI COMPOSITUM.—Fluid Extract of Taraxacum 3·5, Fluid Extract of Wild Cherry 2, Fluid Extract of Licorice 6, Tincture of Sweet Orange Peel 6, Tincture of Cinnamon 3·5, Compound Tincture of Cardamom 3, Aromatic Elixir, *q.s.* to produce 100. Mix them, allow to stand several days if convenient, and filter. Average dose.—8 c.c. (2 fl. drm.).—*U.S.N.F.* 1896.

This has been incorporated in the *B.P.C.*, but *U.S.N.F.* 1906 has altered the quantity of Tincture of Cinnamon from 3·5 to 3·0.

LIQUOR TARAXACI.—A preparation resembling the Succus, but in which the Alcohol (90 p.c.) is added directly to the bruised root before pressing. Introduced many years before the Succus and superior to it. The opinion (*C.D.* '92, i. 612) is wrong that Liquor in this case is synonymous with Fluid Extract, since the root depreciates considerably in the drying, before powdering.

TEREBENUM.

TEREBENE.

A transparent, colourless, mobile, optically inactive liquid.

It consists for the most part of the hydrocarbons Dipentene and Terpinene, with some Cymol and Camphene.

Terebene is described by the *B.P.* as a mixture of Dipentene and other hydrocarbons obtained by agitating Turpentine Oil with successive quantities of Sulphuric Acid until it no longer rotates the plane of a ray of polarised light, subsequently distilling in a current of steam; the *U.S.P.* describes it as a liquid consisting of Dipentene and other hydrocarbons obtained by the action of concentrated Sulphuric Acid on Turpentine Oil and subsequent rectification with steam.

It should be kept in well-stoppered glass bottles of a dark amber tint and protected as far as possible from contact with the light.

Solubility.—1 in 6½ of Alcohol (90 p.c.); in all proportions of Absolute Alcohol or Chloroform; 1 in 3¾ of Ether; 5 in 8 of Glacial Acetic Acid; very sparingly in Water.

Medicinal Properties.—Antiseptic. A stimulating, disinfecting, expectorant in winter cough (chronic bronchitis). It can be used as an inhalation, mixed with Magnesium Carbonate and hot Water, or from an antiseptic respirator.—*B.M.J.* '86, i. 259, 392; '87, i. 796; *P.J.* (3) xvi. 611. In phthisis, *Pr.* liii. 275.

Dose.—5 to 15 minims = 0·3 to 0·9 c.c.

Prescribing Notes.—*Small doses may be taken on* **sugar**. *It may be given in* **mixture** *suspended with Mucilage of Gum Acacia, in* **flexible capsules, lozenges** *or* **pastils.**

Not Official.—Vapor Terebenæ, Terpin Hydrate, and Terpinol.

Foreign Pharmacopœias.—Official in Russ. and U.S.

Tests.—Terebene has a sp. gr. of 0·862 to 0·876; the *B.P.* states 0·862 to 0·866; the *U.S.P.* states from 0·860 to 0·865 at 25° C. (77° F.). It is officially stated not to rotate the plane of a ray of polarised light. It boils between 165° and 175° C. (329° and

347° F.). The *B.P.* states that it should distil between 156° and 180° C. (312·8° and 356° F.), but these limits are generally considered too wide, and admit an optically active specimen. Most commercial samples possess a slight action on polarised light. Naylor (*C.D.* '99, ii. 230) could not imagine why optically inactive Terebene was introduced into the *B.P.*, when the reputation was made on an optically active preparation. *U.S.P.* states that it boils at 160° to 170° C. (320° to 338° F.).

The more generally occurring impurities are acid, undecomposed Turpentine Oil and resinous substances. A piece of blue Litmus paper moistened with Water should not be reddened by a drop of the specimen, indicating the absence of acidity. The sample should be almost completely inactive towards polarised light, indicating the absence of undecomposed oil. When evaporated in a porcelain dish on a water-bath, not more than a slight residue should be left, indicating the absence of more than traces of resinous substances. The *B.P.* requires that not more than 15 p.c. should distil below 165° C. (329° F.), but this statement requires modification, as it would admit specimens of a very bad quality. It is officially required to leave after distillation only a slight viscid residue, indicating the absence of excess of Resin.

Not Official.

VAPOR TEREBENÆ.—Pure Terebene, 40 minims; Light Magnesium Carbonate, 20 grains; Distilled Water, to 1 oz.—*Throat* and *Central Throat*.

TERPIN HYDRATE ($C_{10}H_{20}O_2$, H_2O, eq. 188·74).—Colourless, glistening, rhombic prisms, or a crystalline powder, possessing a faint aromatic odour, and a somewhat bitter taste.

The *U.S.P.* describes it as the Hydrate of the diatomic Alcohol, Terpin. It is official in *U.S.P.* and *P.G.*, but not in the *B.P.*

It should be kept in well-closed bottles of a dark amber tint.

Solubility.—1 in 280 of Water; 1 in 14 of Alcohol (90 p.c.); 1 in 46 of Alcohol (60 p.c.).

The solubility figures for Terpin Hydrate in Water, Alcohol (90 p.c.) and Alcohol (60 p.c.) given in the *B.P.C.* have evidently been derived from the *Companion*. The figures for the solubility in boiling Alcohol, in Ether, and in Chloroform appear to have been taken from the *U.S.P.*, those for the two latter are incorrect for the solubility of the substance in Ether and in Chloroform at the temperatures at which (in the preface) the *B.P.C.* solubilities are stated to have been determined, but are correct for a temperature of 25° C. (77° F.), provided in the case of Ether, that Ether *U.S.P.* (sp. gr., 0·720) is used as a solvent; the point appears to have been ignored in the *B.P.C.* that the Ether *B.P.* is not Ether *U.S.P.*

Used as an expectorant to reduce secretion in bronchitis and other respiratory disorders.—*Pr.* liv. 383.

Dose.—3 to 10 grains = 0·2 to 0·65 gramme.

Foreign Pharmacopœias.—Official in Dutch, Fr., Ger., Ital., Jap., Mex., Norw., Russ., Span. (Terpina), Swed., Swiss and U.S.

Tests.—Terpin Hydrate melts at about 116° C. (240·8° F.); the *U.S.P.* states at 116° to 117° C. (240·8° to 242·6° F.), when quickly heated; the *P.G.* 116° C. (240·8° F.), and loses Water, the m.p. reverting to 102° C. (215·6° F.). When heated it loses its Water, and at a temperature of 258° C. (496·4° F.) anhydrous Terpin distils over, solidifying to a crystalline mass possessing a m.p. of about 102° C. (215·6° F.). It affords an orange-yellow colour on treatment with Sulphuric Acid. The hot aqueous solution is rendered

turbid by the addition of a few drops of Sulphuric Acid, a characteristic powerful aromatic odour being simultaneously evolved. It should possess no pronounced terebinthinate odour. It dissolves readily in hot Alcohol (90 p.c.), to form a clear solution which should not possess an acid reaction towards blue Litmus paper.

TERPINOL.—A colourless, or nearly colourless liquid, possessing a strong hyacinthine odour. It is a mixture of Terpenes with variable proportions of **Terpineol.** It has a tendency to thicken and darken on exposure to air and light. It is practically insoluble in Water, but soluble in Alcohol (90 p.c.) and in Ether.

Official in Span.

Dose.—2 minims = 0·12 c.c.

TEREBINTHINA CANADENSIS.

CANADA TURPENTINE.

B.P.Syn.—CANADA BALSAM.

A clear, pale yellow, or greenish-yellow, slightly fluorescent, viscous oleo-resin, possessing a terebinthinate odour and a somewhat bitter taste.

The oleo-resin official in the *B.P.* is obtained from Abies balsamea, Mill. The liquid oleo-resin official in the *U.S.P.* is obtained from the same tree. It is also derived from *Pinus Fraseri*, Pursh., in Pennsylvania and Virginia, and from *Abies Canadensis*, Mich.

A solution of the hard brittle solid left on the evaporation of the volatile Turpentine when dissolved in Benzol, Toluol, or Xylol is much used as a medium for mounting microscopical objects, and as a cement for glass; it is also used in its natural state for the same purpose.

Solubility.—Soluble in all proportions of Benzol, Chloroform and Ether; 1 in 3 (*or less*) of absolute Alcohol; 1 in 1 (*or less*) of Alcohol (90 p.c.).

Seldom used internally; its medicinal properties are similar to those of Oleum Terebinthinæ.

It is used in the preparation of Collodium Flexile.

Foreign Pharmacopœias.—Official in U.S.

Tests.—Canada Balsam by long exposure to the air or quickly when heated, loses about 25 p.c. of its weight of volatile Oil and forms a hard, brittle solid, which dissolves in Benzol, Toluol or Xylol. It solidifies when mixed with about one-sixth of its weight of Magnesia moistened with a little Water; the *U.S.P.* mentions when mixed with 20 p.c. of its weight of Magnesium Oxide previously moistened with Water. The Ester value of the Balsam varies from 4·5 to 9·8, the Acid value from 84·9 to 85·9, and the Saponification value from 89·4 to 95·7. The Balsam is stated (*C.D.* '04, i. 439) to have a sp. gr. of 0·987 to 0·994, an optical rotation of + 1° to + 4° in a 100 mm. tube, a refractive index at 20° C. (68° F.) of 1·518 to 1·521 and an Acid value of 84 to 87. The Volatile Oil is stated to have a sp. gr. of 0·862 to 0·865, an optical rotation of −26° to −29° in a 100 mm. tube, a refractive index at 20° C. (68° F.) of 1·472 to 1·477 and an Ester content calculated as Bornyl Acetate of 0·4 to 0·6 p.c. The *B.P. Codex* stated that 'the Volatile Oil consists

chiefly of Lævo-pinene, that the sp. gr. of the Oil is about 0·987 to 0·994, optical rotation, +1° to +4°, refractive index, 1·518 to 1·521; Acid value, 84 to 87.' The word 'Oil' was subsequently altered to 'Turpentine' in the list of additions and corrections.

Not Official.

TEREBINTHINA CHIA.

CHIAN TURPENTINE.

An oleo-resin obtained from the incised trunk of *Pistacia Terebinthus*, collected in Scio. A soft solid with a characteristic odour. When treated with its own weight of Absolute Alcohol or pure Ether, the greater portion is dissolved. Was recommended in cancer.—*L.* '87, ii. 1005, 1144, 1190, 1244.

Dose.—5 to 10 grains = 0·32 to 0·65 gramme.

Official in Port.

PILULA TEREBINTHINÆ CHIÆ. — Chian Turpentine, 6 grains; Sublimed Sulphur, 4 grains. To be made into 2 pills, and taken every 4 hours.

A case is reported of these pills forming a compact mass in the bowel, removed by enemas.—*C.D.* '90, ii. 75.

TEREBINTHINÆ OLEUM.

OIL OF TURPENTINE.

Fr., Essence de Térébinthine Officinale; Ger., Terpentinol; Ital., Essenza di Trementina; Span., Esencia de Trementina.

A transparent, colourless, or nearly colourless, limpid liquid.

The volatile Oil official in the *B.P.* is obtained from *Pinus sylvestris* and other species of *Pinus*, and is rectified if necessary. The *U.S.P.* includes both an Oil of Turpentine and a rectified Oil of Turpentine. The Oil is described as a volatile Oil recently distilled from Turpentine; Turpentine *U.S.P.* is described as a concrete oleo-resin obtained from *Pinus palustris*, Miller, and from other species of *Pinus*. The *P.G.* also includes a Turpentine Oil and a rectified Oil of Turpentine. The Oil of Turpentine *P.G.* is described as a volatile Oil obtained from different species of *Pinus*. The rectified Oil of Turpentine of the *U.S.P.* is prepared by treating the Turpentine Oil with Sodium Hydroxide Solution (about 5 p.c.) and re-distillation. That of the *P.G.* by treatment with Calcium Hydroxide Solution and re-distillation; in each case three-fourths of the distillate is collected.

It should be kept in well-closed glass vessels, preferably of a dark amber tint and in a cool atmosphere.

The Oil of Turpentine sold in Britain is almost wholly imported from America, and is the product (mainly) of *Pinus palustris*, Mill., and *P. Tæda*, L. German and Russian Oil is principally distilled from *P. sylvestris*, L.; French Oil from *P. Pinaster*, Sol. Hungarian Oil of Turpentine is distilled from the cones of *P.P umilis*, Haenke, and Carpathian Oil of Turpentine, also known as Riga Balsam, from *P. Cembra*, L.

Oil of Turpentine, especially Russian, when exposed to the continuous action of atmospheric air in presence of Water, develops a large quantity of Hydrogen Peroxide, Camphoric Acid, and other oxygenated products, which form the basis of the '**Sanitas**' series of disinfectants.

Oil of Turpentine dissolves Beeswax, Iodine, Sulphur, Phosphorus, fixed Oils; also Resins, forming varnishes.

Solubility.—1 in 6½ of Alcohol (90 p.c.); in all proportions of Absolute Alcohol, Carbon Bisulphide, Chloroform, Ether, sp. gr. 0·720, and Glacial Acetic Acid.

Medicinal Properties.—Antiseptic, expectorant, hæmostatic, diuretic, anthelmintic. Useful in passive hæmorrhage from the various organs; 4 fl. drm. along with an equal quantity of Castor Oil is often successful in removing tapeworm. Antispasmodic in hysterical affections and in hiccough; it is said to dissolve gall-stones. In small doses (2 to 10 minims), and in large doses (3 to 4 fl. drm.), it does not usually tend to irritate the kidneys, but in doses of about 1 fl. drm. it is apt to do so. Contra-indicated in Bright's disease. Used as an **inhalation** in chronic bronchitis and other lung diseases; as an **enema** with Castor Oil for obstinate constipation, for flatulency and tympanitic distension of the bowels, and in thread-worm. Externally rubefacient and counter-irritant; employed as a **liniment** in chronic inflammatory pain and rheumatism, and as a fomentation in acute pain.

10-minim **capsules** every 2 or 3 hours, or in the form of an **emulsion** with equal parts of Spirit of Chloroform and Spirit of Nitrous Ether, have given good results in enteric fever, but should not be given in albuminuric vesical catarrh.—*B.M.J.* '04, ii. 1450. An **enema** of Soap and Water containing 1 oz. of Turpentine is of great value where there is flatulent distension of the colon.—*B.M.J.* '04, ii. 1452. Its use is stated to check bleeding sometimes, but to be more effectual in melæna than in hæmoptysis.—*B.M.J.* '05, i. 68. Its value as a styptic in typhoid has been questioned, but in the absence of a better remedy it should be used.—*B.M.J.* '05, i. 414.

In hæmoptysis in 10-minim doses in capsules.—*Edin. Med. Jour.* '05, p. 467.

In renal hydatids, 15 minims mixed with Liquor Potassæ, Mucilage and Liquorice, night and morning.—*L.* '05, ii. 601.

Flies and gnats are kept away by the odour of Turpentine.

Dose.—2 to 10 minims = 0·12 to 0·6 c.c.; as an anthelmintic, 3 to 4 fl. drm. = 10·6 to 14·2 c.c.

Prescribing Notes.—*Usually given in the form of* **mixture** *suspended with Mucilage or Powder of Gum Acacia. It may be given in Mistura Amygdalæ. It is also given in* **capsules.** *1 fl. drm. of Mucilage, with diligent trituration, renders ½ fl. drm. of Oil of Turpentine emulsive with 1 fl. oz. of Distilled Water.*

30 grains Powder of Gum Acacia rubbed first with 1 fl. drm. of Oil of Turpentine, then with 1 fl. drm. of Water, and lastly triturated whilst adding gradually 1 fl. oz. Distilled Water, makes a good emulsion.

Official Preparations. — Linimentum Terebinthinæ and Linimentum Terebinthinæ Aceticum. Used in the preparation of Terebenum.

Not Official.—Confectio Terebinthinæ, Emulsum Olei Terebinthinæ, Enema Terebinthinæ, Linimentum Terebinthinæ, Unguentum Terebinthinæ, Vasolimentum Terebinthinæ, and Parogenum Terebinthinæ.

Antidotes. — Emetics, Epsom Salts, demulcent drinks, Morphine or Laudanum to relieve pain.

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

Austr., Ger., Jap., Swiss and U.S. have also Rectificatum; Dutch has also Depuratum.

Tests.—Rectified Oil of Turpentine has a sp. gr. of 0·860 to 0·880; the *B.P.* does not give a sp. gr.; the *U.S.P.* states 0·860 to 0·870 at 25° C. (77° F.); the *P.G.* 0·860 to 0·870. It boils at

about 156° C. (312·8° F.), which is the figure given in the *B.P.* The *P.G.* states that it distils completely between 155° and 162° C. (311° and 323·6° F.). The *B.P.* states that it should distil almost entirely below 180° C. (356° F.). This temperature is considered (*C.D.* '98, ii. 55) to be too high, boiling at about 155° C. (311° F.) and at least 80 p.c. distilling below 165° C. (329° F.) would have been better. The *U.S.P.* requires that the larger part of the Oil should pass over between 155° and 162° C. (311° and 323·6° F.). The optical rotation of the Oil may be either dextrogyrate or lævogyrate. French Oil of Turpentine is strongly lævorotatory (−20° to −40° in a tube of 100 mm. length). American Oil of Turpentine is dextrogyrate, the rotation usually varying from +9° to +14°. A 62 lb. quantity when fractionally distilled (*C.D.* '00, ii. 174) yielded up to 162·5° C. (324·5° F.) a distillate (91·2 p.c. of the whole) which was entirely dextrogyrate, and from 162·5° to 190° C. (324·5° to 374° F.) fractions (amounting to 8·52 p.c.) which increased in lævorotation with the boiling point, namely from −0·8° to −10·3°. Neither the *B.P.*, the *U.S.P.* nor the *P.G.* refers to the optical rotation. It is officially stated to be soluble in its own volume of Glacial Acetic Acid. This test has been shown (*P.J.* '02, i. 503) by the author and C. M. Caines to be practically of no value as a test for Oil of Turpentine, although useful as a test of the strength of Glacial Acetic Acid. An acid conforming strictly to the *B.P.* titration test (which requires a definite figure) cannot be expected to form a clear solution with all samples of Oil of Turpentine when mixed in equal volumes. Commercial samples of Glacial Acetic Acid which require more than the *B.P.* figure will mix readily without subsequent separation, and most of the commercial acids give a higher figure than the *B.P.* With such samples of Oil of Turpentine as had up to that time been examined the mixture of any of them in equal volumes with Glacial Acetic Acid [temperature 14·4° to 16·7° C. (58° to 62° F.)] became a delicate test for a strength of 99·5 p.c. acid or stronger. The test is also referred to under Acidum Aceticum Glaciale.

The more generally occurring impurities are Petroleum, Paraffin Oils, Rosin, Rosin Oil, Petroleum Benzin, Kerosene Oil or similar hydrocarbons. Petroleum, Paraffin Oils or Rosin, if present, may be detected by the residue test. Kerosene or Rosin Oil, if present, by the evaporation test. Petroleum Benzin, Kerosene and similar hydrocarbons by the Sulphuric Acid test, each of which tests is described in small type below. Some work done in the laboratory of the Canadian Inland Revenue Department (*C.D.* '02, i. 955) has resulted in the following definition of Oil of Turpentine, which must, however, be regarded as provisional, and subject to correction and amplification; it should be colourless, in thin layers, clear, but made decidedly opaque by shaking with 1·0 p.c. of Water and giving an opaque distillate of one-tenth volume which settles clear in a few hours. The peculiar and characteristic odour quite distinct from that of Gasolene, Rosin Oil, or Acetone. It has a sp. gr. between 0·860 and 0·880 (usually about 0·870). Samples which have been long exposed to the air

have a higher density. The first 10 p.c. fraction has a sp. gr. of between 0·856 and 0·870 (usually about 0·860); the residual tenth should not exceed 0·900. The boiling point should lie between 154° and 158° C. (309·2° and 316·4° F.); nine-tenths should distil below 180° C. (356° F.). Fixed residue should not exceed 2 p.c., flash point about 32° C. (89·6° F.). The optical activity of the first fraction should increase in a plus direction by oxidation. The refractive index at 20° C. should lie between 1·4667 and 1·4722, that of the first fraction should not exceed 1·470. Moistened Starch Iodide paper should not become blue when suspended over Turpentine exposed to the air, free Bromine in solution should not be decolorised. Strong Sulphuric Acid should polymerise and char the sample at a boiling temperature, a rise of temperature should result on mixing with Sulphuric Acid.

Residue.—After distillation it should leave little or no residue, *B.P.*; 1 c.c. evaporated in a small dish on a water-bath should leave not more than a very slight residue, *U.S.P.*

Evaporation Test.—3 drops of Oil of Turpentine placed on a sheet of clean white filter paper and exposed to the air should evaporate entirely without leaving a permanent stain, *U.S.P.*

Potassium Hydroxide.—If 5 c.c. of the Oil be shaken with an equal volume of Potassium Hydroxide T.S., its colour should not become darker than a light straw-yellow upon standing 24 hours, *U.S.P.*

Sulphuric Acid.—If 5 c.c. of the Oil be placed in a small beaker and 20 c.c. of Sulphuric Acid be gradually added, with agitation, while the beaker is cooled by immersion in cold Water, and the contents, after cooling and renewed agitation, be transferred to a burette, graduated in tenths, the clear layer which forms after the dark mass has settled should not measure more than 0·35 c.c. (absence of Petroleum Benzin, Kerosene, or similar hydrocarbons), *U.S.P.*

Preparations.

LINIMENTUM TEREBINTHINÆ. LINIMENT OF TURPENTINE.

Dissolve 1 of Camphor in 13 of Oil of Turpentine and add them gradually to a mixture of 1½ of Soft Soap in 2 of Distilled Water, with constant trituration until a cream is produced, and add Distilled Water, *q.s.* to yield 20. (about 1 in 1½)

Official in U.S., Resin Cerate 55, Oil of Turpentine 35.

LINIMENTUM TEREBINTHINÆ ACETICUM. LINIMENT OF TURPENTINE AND ACETIC ACID.

Oil of Turpentine, 4; Glacial Acetic Acid (by weight), 1; Liniment of Camphor, 4. (about 1 in 2)

An imitation of St. John Long's celebrated Liniment.

Foreign Pharmacopœias.—Official in Swed. (Linimentum Terebinthinæ Acetatum), 9 Oil in 20; Swiss (Linimentum Terebinthinæ Compositum), about 3 Oil in 10.

Not Official.

CONFECTIO TEREBINTHINÆ.—Oil of Turpentine, 1 fl. oz.; Liquorice Root, in powder, 1 oz.; Clarified Honey, 2 oz. Rub the Oil of Turpentine with the Liquorice, add the Honey, and mix to a uniform consistence.—*B.P.* 1885.

This has been incorporated in the *B.P.C.*

EMULSUM OLEI TEREBINTHINÆ.—Rectified Oil of Turpentine, 15; Expressed Oil of Almond, 5; Syrup, 25; Acacia, 15; Water, *q.s.* to make 100.—*U.S.P.*

ENEMA TEREBINTHINÆ.—Oil of Turpentine, 1 fl. oz.; Mucilage of Starch, 15 fl. oz.—*B.P.* 1885.

Oil of Turpentine, ¼ to ½ fl. oz.; Mucilage of Starch, ½ to 1 pint.—*St. Thomas's.*

Oil of Turpentine 2; Mucilage of Starch 100.—*B.P.C.*

LINIMENTUM TEREBINTHINÆ.—*Rosin Cerate 65; Oil of Turpentine, by weight, 35. Dissolve the melted Cerate in the Oil of Turpentine and mix thoroughly.—*U.S.P.*

***Ceratum Resinæ.**—Rosin 35; Yellow Wax 15; Lard 50.—*U.S.P.*

UNGUENTUM TEREBINTHINÆ.—Oil of Turpentine, 1 fl. oz.; Resin, in coarse powder, 54 grains; Yellow Wax, ½ oz.; Prepared Lard, ½ oz.—*B.P.* 1885.

This has been incorporated in the *B.P.C.* as follows:—

Oil of Turpentine, by weight, 45; Resin, in coarse powder, 5; Yellow Beeswax 25, Lard 25.

Turpentine 1, Yellow Wax 1, Oil of Turpentine, by weight, 1.—*Ger.*

VASOLIMENTUM and **PAROGENUM TEREBINTHINÆ.** *See* p. 717.

Not Official.

THALLINÆ SULPHAS.

$(C_{10}H_{13}NO)_2 . H_2SO_4, 2H_2O$, eq. 456·94.

A yellowish-white crystalline powder, with an odour resembling that of Coumarin, and an aromatic bitter taste.

The Sulphate of a synthetically prepared base derived from Chinoline, the full name of which is Tetrahydroparaquinanisol or Tetrahydroparamethyloxychinolin.

The free base is precipitated from solutions by alkalis, and from it are obtained the **Iodide** and other Iodinated compounds (*e.g.*, **Periodotetrahydroparamethyloxychinolinum**) which have been used in cancer.

Solubility.—1 in 7 of Water.

Medicinal Properties.—Antipyretic and antiseptic. Has been recommended internally in typhoid and other fevers.—*L.* '84, ii. 1018; *L.M.R.* '85, 456; *B.M.J.* '87, ii. 1438.

For gonorrhœa, an **injection** 2½ grains in 150 minims of Water; a **bougie** 2 grains in 40 grains of Cacao Butter.—*B.M.J.* '87, ii. 1438; *L.M.R.* '87, 162.

Adverse results in gonorrhœa.—*B.M.J.* '89, i. 1458.

Dose.—3 to 8 grains = 0·2 to 0·52 gramme.

Tests.—Thalline Sulphate dissolves readily in Water, forming a solution which possesses an acid reaction towards blue Litmus paper, and which becomes brown on exposure to the light. From this solution Iodine Solution throws down a brownish-red precipitate, Tannic Acid Solution a white precipitate, and Potassio-mercuric Iodide (Mayer's) Solution a yellow precipitate. The dilute aqueous solution affords on the addition of Ferric Chloride T.S. a green coloration, changing on standing to a deep red; this green coloration is destroyed by reducing agents. Ammonia Solution precipitates the free base as a white precipitate which is soluble in Ether. The aqueous solution affords with Barium Chloride Solution a white precipitate insoluble in Hydrochloric Acid. The salt should dissolve to form an almost colourless solution in Sulphuric Acid, indicating the absence of organic impurities. It should leave no weighable residue when heated with free access of air.

Cereoli (Antrophores) are medicated bougies containing a spiral spring wound with fine wire, and coated first with an insoluble layer of White Gelatin,

and then with a diluted Mucilage. They are sometimes medicated throughout and sometimes only medicated externally.

No special medicament is specified in the *Ph. Ger.*, but they may be medicated in any desired manner.

Antrophores of the salt, described above, have been found useful in gonorrhœa.

Foreign Pharmacopœias.—Official in Ger.

THEOBROMATIS OLEUM.

OIL OF THEOBROMA.

B.P.Syn.—Cacao Butter.

A pale yellow or whitish-yellow fatty solid, having a distinctive odour of Cocoa and a bland agreeable taste. It is officially described as a concrete Oil, obtained by pressing the warm crushed seeds of *Theobroma Cacao*, L.; the *U.S.P.* describes it as a fixed Oil expressed from the roasted seeds of *Theobroma Cacao*. The *P.G.* describes it as the expressed fat from the seeds of *Theobroma Cacao* free from husk.

Official Preparations.—Contained in all the suppositories except Glycerin.

Not Official.—Theobromina, Theobrominæ Salicylas, Urocitral, Diuretin and Theocin, Theocin Sodium Acetate, Theobroma Solution Tablet Excipient, Ether-Alcohol Solution of Theobroma Excipient for Tablets.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Ger., Hung., Jap., Norw., Russ., Swed. and Swiss (Oleum Cacao); Fr. (Beurre de Cacao); Ital. (Burro di Cacao); Mex. (Manteca de Cacao); Port. (Oleo de Cacao); Span. (Aceite de Cacao); U.S. (Oleum Theobromæ).

It has been shown (*C.D.* '89, i. 800) that a large number of substances used in the form of suppositories caused the m.p. of the mixture to be several degrees higher than the base employed.

Cocoa-nut Stearin is sometimes a better substance than Cacao Butter for making suppositories. *See* p. 1154.

Tests.—Theobroma Oil softens at 30° to 34° C. (86° to 93·2° F.), and melts between 31·1° and 33·3° C. (88° and 92° F.); the *U.S.P.* gives the m.p. as 30° to 35° C. (86° to 95° F.); the *B.P.* gives 31·1° to 33·9° C. (88° to 93° F.). The m.p. has been shown to depend largely upon the method by which it is taken, the degree of heat to which the Oil is subjected previous to the determination, the diameter of bore of the capillary tube, and the time allowed to elapse between the melting of the Oil and the actual determination of its m.p. It requires about 24 hours in a capillary tube to regain its original m.p. Neither the *B.P.* nor the *P.G.* refers to the sp. gr. The *U.S.P.* gives the sp. gr. as 0·970 to 0·976 at 25° C. (77° F.). It usually possesses a sp. gr. of about 0·990, but authorities differ greatly respecting this constant. It possesses an Acid value of nil to 4·1 a Saponification value of 188 to 198. Neither the *B.P.*, the *U.S.P.*, nor the *P.G.* gives a figure for the Acid value. The *U.S.P.* gives 188 to 195 for the Saponification value; neither the *B.P.* nor the *P.G.* refers to this latter test. The Iodine value varies from 33 to 37, it is not referred to by the *B.P.* The *U.S.P.* states not less

than 33 nor more than 38, the *P.G.* not less than 34 and not more than 38. 12 samples examined in the author's laboratory possessed Acid values ranging from nil to 4·1, with an average of 2·3; Saponification values ranging from 193·7 to 202·2, with an average of 197·2; and Iodine values ranging from 30·5 to 40·6, with an average of 36·1.

The more generally occurring impurities are Wax, Stearin, Tallow or Suet, or fixed Oils, *e.g.*, Sesame. These may be detected by their influence on the physical constants of the Oil and by their effect on the Acid, Saponification, and Iodine values. Wax, Stearin, Tallow or Suet and other fats may also be detected by the Ether test described in the small type below. The addition of Paraffin Wax will reduce the Saponification value.

Ether.—Dissolve 1 gramme of the Oil in 3 c.c. of Ether in a test-tube at 17° C. (62·6° F.) and place the tube (plunge it frequently, *U.S.P.*) in Water at 32° F. (0° C.). The liquid should not become turbid nor deposit a granular mass (white flakes, *U.S.P.*) in less than 3 minutes; and if the mixture after congealing be exposed to a temperature of 60° F. (15·5° C.), it should gradually become clear (absence of Wax, Stearin, Tallow, etc.), *B.P.* and *U.S.P.* the temperature given in the latter Pharmacopœia is 15° C. (59° F.); a solution of the Oil in 2 parts of Ether should not become turbid in the course of a day at 12° to 15° C. (53·6° to 59° F.), *P.G.*

Saponification.—When saponified by Alcoholic Potassium Hydroxide T.S. it should show a Saponification value of 188 to 195, *U.S.P.*

Iodine Absorption.—If 0·8 gramme of the Oil be dissolved in 10 c.c. of Chloroform in a 250 c.c. bottle or flask, and 25 c.c. of a mixture of equal volumes of Alcoholic Iodine T.S. and Alcoholic Mercuric Chloride T.S. added, and if, after standing for 4 hours protected from light, 20 c.c. of Potassium Iodide T.S. be added and the mixture diluted with 50 c.c. of Water, on titrating the excess of Iodine with Tenth-normal Volumetric Sodium Thiosulphate Solution an Iodine value of not less than 33 nor more than 38 should be obtained, *U.S.P.*; when 1 gramme of the Oil is dissolved in 15 c.c. of Chloroform and mixed with 25 c.c. Alcoholic Iodine Solution and Alcoholic Mercuric Chloride Solution and allowed to remain at rest protected from direct daylight for 4 hours and a solution of 1·5 grammes of Potassium Iodide in 100 c.c. of Water is then added, the mixture when titrated with Tenth-normal Volumetric Sodium Thiosulphate Solution shall show an absorption value of not less than 34 nor more than 38, *P.G.*

Not Official.

THEOBROMINA. Dimethyl-xanthine, $C_7H_8N_4O_2$, eq. 178·89.—White crystalline powder, appearing under the microscope as trimetic needles.

Solubility.—1 in 1700 of Water, 1 in 5000 of Alcohol (90 p.c.).

It is the alkaloid contained in the Cacao seeds and is isomeric with Theophylline and Paraxanthine. It is the lower homologue of Caffeine, and has a similar physiological action but stronger. It is much less soluble in Water than Caffeine, and acts the part of a weak Acid, forming compounds with alkalis. The seeds contain 1 to 2 p.c. of the alkaloid.

Diuretic, acting most efficiently in cases of cardiac disease.—*T.G.* '93, 767; *B.M.J.E.* '93, ii. 104. Considered in many respects superior to Diuretin.—*Pr.* li. 299. Diuresis may be prolonged by the subsequent administration of Digitalin ($\frac{1}{128}$ and $\frac{1}{64}$ grain).—*T.G.* '96, 330; *L.* '96, i. 205; ii. 1820; *P.J.* '95, ii. 391).

Not a genuine diuretic, but a cardiac stimulant; useful in arterio-sclerosis and aortic incompetence; but the action is temporary and palliative rather than curative.—*B.M.J.E.* '05, i. 4.

Dose.—5 to 10 grains = 0·32 to 0·65 gramme.

Official in Austr., Dutch, Fr., Span., Swed. and Swiss.

Tests.—Theobromine sublimes without decomposition or previous fusion at 290° C. (554° F.). *Fr. Codex* (1908) gives about 260° C. (500° F.). It dissolves very sparingly in Water. It dissolves in acids and is reprecipitated from solution by alkali, but is soluble in excess of Ammonia Solution or in solutions of Potassium or Sodium Hydroxide. An aqueous solution of Theobromine affords with Mercuric Chloride Solution a white crystalline precipitate. On the addition of Silver Nitrate Solution to a dilute aqueous solution of Theobromine or a Theobromine salt, silver-white needles are precipitated after a short time. When a small quantity of Theobromine is evaporated to dryness on a water-bath with an excess of Chlorine Water it leaves a reddish-brown residue, which assumes a purple-violet coloration when moistened with Ammonia Solution. Theobromine may be completely extracted from its solutions by shaking with Chloroform. When ignited with free access of air it should leave no weighable residue.

Theobrominæ Salicylas.—Theobromine Salicylate may be prepared by dissolving molecular proportions of Theobromine and Salicylic Acid in Water, evaporating to dryness and powdering the residue. The salt is stated to be more stable than the double salt, Sodium Theobromine Salicylate, which is decomposed even by Carbon Dioxide. Whilst admitting the advantage which it possesses with regard to its stability, an insurmountable obstacle is presented to its extended use on account of its insolubility.

Tests.—Theobromine Salicylate is only very slightly soluble in Water. The solution affords a violet coloration on the addition of Ferric Chloride T.S. The salt dissolves in Sodium Hydroxide Solution with the formation of a double Salicylate (Sodium Theobromine Salicylate).

UROCITRAL (Theobromine Sodium Citrate).—A white powder, soluble in warm Water. It is stated to contain 45 p.c. Theobromine. Introduced as a diuretic.—*B.M.J.* '05, i. 81.

DIURETIN. Sodium Theobromine Salicylate. $C_7H_7NaN_4O_2,C_7H_5O_3Na$, eq. 359·66.—A white, odourless, unstable powder.

It should be kept in well-stoppered glass bottles of a dark amber tint and exposed as little as possible to contact with the air, as it is liable to absorb Carbon Dioxide, decomposition simultaneously occurring.

A comparison of this drug with Agurin shows (*B.M.J.E.* '04, ii. 59) little fundamental difference of action, but only difference of degree.

Dose.—10 to 20 grains = 0·65 to 1·3 grammes, thrice daily.

Ph. Ger. maximum single dose, 1 gramme; maximum daily dose, 6 grammes.

Foreign Pharmacopœias.—Official in Austr., Belg., Dan., Dutch, Ger., Ital., Jap., Mex., Span., Swed. and Swiss.

Tests.—Sodium Theobromine Salicylate dissolves, when freshly prepared readily in Water, forming a colourless solution possessing an alkaline reaction towards red Litmus paper. A diluted aqueous solution when acidified with Acetic Acid yields on the addition of Ferric Chloride T.S. a violet coloration. When the aqueous solution is acidified with Hydrochloric Acid, Salicylic Acid as well as Theobromine is precipitated as a white precipitate, redissolving on the addition of Sodium Hydroxide Solution, but not on the addition of Ammonia Solution. 10 c.c. of a 1 in 5 w/w aqueous solution, from which the Theobromine and the Salicylic Acid have been precipitated by the addition of Hydrochloric Acid, and again redissolved by the addition of Sodium Hydroxide Solution (15 p.c.), when shaken with 10 c.c. of Chloroform and the Chloroform evaporated to dryness shall leave not more than 0·005 gramme of residue for each 1 gramme of Sodium Theobromine Salicylate represented in the original volume employed. A weighed quantity of 2 grammes of Sodium Theobromine Salicylate is dissolved by the aid of a gentle heat in a porcelain dish in 10 c.c. of Water, the solution is mixed with 5 c.c. or a sufficient quantity of Normal Volumetric Hydrochloric Acid Solution to render it slightly acid, and when mixed, 1 drop of a diluted Ammonia Solution (1 to 10) is added, and the very faintly alkaline mixture is allowed to stand for 3 hours at a temperature of from 15° to 20° C. (59° to 68° F.)

with intervals of frequent stirring, the resulting precipitate is filtered through a tared filter paper, previously dried at 100° C. (212° F.), washed twice with 10 c.c. of cold Water, dried till constant at 100° C. (212° F.) and when cooled weighed. The weight shall amount to at least 0·8 gramme, corresponding to at least 40 p.c. of Theobromine. 1 part by weight of this precipitate mixed with 100 parts of Chlorine Water and evaporated to dryness on a water-bath leaves a yellowish-red residue, which, on the addition of a little Ammonia Water, yields a beautiful purple-red coloration. The filtrate from this Theobromine precipitate contains the Salicylic Acid, which may be determined by acidulating with Hydrochloric Acid and shaking out with Chloroform. The chloroformic solution is washed with Water till free from mineral acid, sufficient Water added to form a separate layer, a few drops of Phenolphthalein Solution added and the mixture titrated with Tenth-normal Volumetric Sodium Hydroxide Solution; 1 c.c. of Tenth-normal Volumetric Sodium Hydroxide Solution corresponds to 0·013701 gramme of Salicylic Acid, it should contain about 38·5 p.c.

THEOCIN. Theophylline, Dimethylxanthin. $C_7H_8N_4O_2$, eq. 178·89.—Colourless, or white crystalline needles possessing a bitter taste. Theophylline is isomeric with Theobromine and Paraxanthin. It is stated to crystallise with 1 molecule of Water of crystallisation, which it loses at 110° C. (230° F.). Soluble 1 in 190 Water, 1 in 80 of Alcohol (90 p.c.), forming Potassium and Ammonium compounds which are readily soluble. It is a synthetic alkaloid, and is identical in composition with **Theophylline,** the alkaloid occurring with Theine or Caffeine in tea. It has been introduced as a diuretic. It has been used in kidney disorders with general dropsy, and appears to be most efficient when considerable œdema exists.—*B.M.J.E.* '03, ii. 39, 56; *A.J.P.* '03, 27; *C.D.* '03, i. 50; *P.J.* '03, i. 2. In *B.M.J.* '05, i. 1079 it is pointed out that it is a less powerful stimulant than Caffeine, but more active as a diuretic than Caffeine or Theobromine. A full dose may cause nausea or even vomiting, therefore the dose should not exceed 6 or 7 grains = 0·4 to 0·6 gramme.

Dose.—3 to 6 grains = 0·2 to 0·4 gramme.

It is also supplied in tablet form, each tablet containing 4 grains = 0·26 gramme.

Tests.—Theophylline melts at about 264° C. (507·2° F.). Synthetic Theocin melts at 268° C. (514·4° F.). It dissolves readily in warm Water, but is only sparingly soluble in cold Alcohol (90 p.c.); it is readily soluble in very dilute Ammonia Solution. When evaporated to dryness with Chlorine Water it yields a scarlet residue, changing to purple-red on the addition of a little Ammonia Solution. When ignited with free access of air it should leave no weighable residue. On the addition of Silver Nitrate to an aqueous solution of Theophylline an amorphous precipitate is produced.

THEOCIN SODIUM ACETATE. $C_7H_7NaN_4O_2NaC_2H_3O_2$, eq. 282·23.—A white powder containing about 65 p.c. of anhydrous Theocin. It is soluble 1 in 6 of Water, 1 in 390 of Alcohol (90 p.c.), and insoluble in Ether. It is a double salt of Sodium Acetate, and 1 : 3 Dimethylxanthin Sodium. It was introduced as a diuretic and is indicated in all forms of dropsy in which the functions of the kidneys are not too seriously impaired by disease. It may be administered in cases of œdema resulting from renal disease, with the exception of cases of glomerulo-nephritis, in which active interference is contra-indicated. It should afford beneficial results in interstitial nephritis and in arterio-sclerosis of the kidneys, and in granular contracted kidney, and has been used with benefit for its vaso-dilator antispasmodic effects in angina pectoris.

Striking effect as a diuretic, but to be effective must be given with a cardiac tonic such as Digitalis; in 3 to 8-grain cachets every 4 hours; effects to be carefully watched, as it is apt to irritate the stomach.—*B.M.J.* '07, ii. 388.

Confirmation of the foregoing, in a severe case of ascites and œdema; no ill-effects.—*B.M.J.* '07, ii. 752.

Dose.—4 grains = 0·26 of a gramme.

Tests.—Theocin Sodium Acetate dissolves readily in Water, forming a solution which is slightly alkaline in reaction towards blue Litmus paper. It affords with Ferric Chloride T.S. a dark red coloration, and on boiling a brownish-

red precipitate. When heated with Sulphuric Acid it evolves a strong characteristic acetous odour, when further warmed with a little Alcohol (90 p.c.) it evolves a characteristic odour of Ethyl Acetate (Acetic Ether). When ignited with free access of air it leaves a residue which when dissolved in Water possesses a strong alkaline reaction towards red Litmus paper, and effervesces on the addition of diluted Hydrochloric Acid; it yields the tests distinctive of Sodium given under that heading.

THEOBROMA SOLUTION TABLET EXCIPIENT.—Oil of Theobroma, 25; Hard Soap, 5; Powdered Tragacanth, 0·5; Benzoic Acid, 0·25; Water, to 100. Dissolve the Soap in 25 parts of Water by heat, add the hot solution to the melted Theobroma and mix by whisking or agitation, shake in the Tragacanth, add the rest of the Benzoic Acid, then the rest of the Water. Gum Acacia may be used in place of Soap without making any appreciable difference in the general utility of the product, in either case it should be a thick, smooth, white cream, free from lumps.—*C.D.* '03, ii. 231.

This has been incorporated in the *B.P.C.* under the title Emulsio Theobromatis, using 3 of Hard Soap in the place of 5 given originally.

ETHER-ALCOHOL SOLUTION OF THEOBROMA EXCIPIENT FOR TABLETS.—Oil of Theobroma, 1; Ether, to 6 fl. oz.—Dissolve, and add an equal volume of Rectified Spirit as required for use.—*C.D.* '03, ii. 231.

This has been incorporated in the *B.P.C.* under the title **Liquor Theobromatis Ætherеus.**

For general directions for making Compressed Tablets *see* p. 1190.

THUS AMERICANUM.

FRANKINCENSE.

A softish, pale, opaque solid, possessing an agreeable terebinthinate odour. On keeping it hardens and forms a translucent brittle solid. It is officially described as the concrete oleo-resin which is scraped off the trunks of *Pinus palustris*, Mill., and *Pinus Tæda*, L.

From the Southern States of North America.

Solubility.—Almost wholly soluble 1 in 1 of Alcohol (90 p.c.); entirely 4 in 3 of Ether.

Medicinal Properties.—Used externally for the same purposes as Resin.

Official Preparation.—Used in the preparation of Emplastrum Picis.

THYMOL.

THYMOL.

$C_{10}H_{13}(OH)$, eq. 148·98.

Large, colourless, translucent, oblique, rhombic prisms, having a distinctive somewhat agreeable, Thyme-like odour, and burning, aromatic taste. It is a crystalline Phenol contained in the volatile Oils of *Thymus vulgaris*, L., *Monarda punctata*, L., and *Carum Copticum*, Benth. and Hook. f.; but is chiefly obtained commercially from the last named. Thymol is described by the *U.S.P.* as a Phenol occurring in the volatile Oil of *Thymus vulgaris*, L., and in some other volatile Oils.

It should be kept in well-closed vessels of a dark amber tint.

Solubility.—1 in 1500 of Water; 1 in 190 of Glycerin; 8 in 3 of Alcohol (90 p.c.) or Ether; 8 in 5 of Chloroform; 1 in 6 of Petroleum Spirit; 1 in 3 of Oil of Turpentine; 1 in 2 of Olive Oil; 4 in 3 of Glacial Acetic Acid; 1 in 6 of Solution of Potassium Hydroxide.

The above figures for solubility have been incorporated in the *B.P.C.* The expressions peculiar to the *Companion*, 8 in 3 of Alcohol (90 p.c.) or Ether, 8 in 5 of Chloroform, and 4 in 3 of Glacial Acetic Acid being also used.

Medicinal Properties.—A saturated **solution** in Water is a very powerful antiseptic; used as an intestinal antiseptic in diarrhœa and typhoid. As an **ointment** or **soap** in parasitic skin diseases. As an **inhalation** in laryngitis and bronchial affections; and for many other conditions in which Carbolic Acid is useful. It is a very powerful deodorant, and is a local anæsthetic.

In ankylostomiasis, no vermifuge is comparable to it. 10 to 60 grains for fairly robust patients, not more than 10 grains for those who are very ill, or much advanced in years.—*B.M.J.* '03, i. 720.

Recommended in ankylostomiasis (*Pr.* lxxiii. 685), in 2 or 3 doses of 2 grammes = 30 grains, at 2 hours' interval, after a little Coffee or Broth in the early morning, and after a Calomel and Senna purge. 6 grammes is the limit advised, and a dose of Epsom salts should be given 2 hours after the last dose to eliminate the Thymol from the intestinal tract. Children, $\frac{1}{4}$ to $\frac{1}{3}$ the full dose. The administration of any of the usual solvents of Thymol must be avoided.

In ankylostomiasis should be given (*L.* '05, i. 860) in large and repeated doses, $\frac{1}{2}$ drm. every 2 hours for several doses.

Usually employed as a deodorant, which property it possesses to a marked degree; its **aqueous solution** is very useful in a night commode, and an extremely small quantity of it will keep urine, when it is required to make a 24 hours' collection for analytical purposes.

Dose.—$\frac{1}{2}$ to 2 grains = 0·032 to 0·13 gramme.

Not Official.—Glycerinum Thymol Alkalinum, Glycerinum Thymol Compositum, Liquor Antisepticus, Liquor Thymol, Thymol Antiseptic Dressings, Unguentum Thymol, Vapor Thymol, Oleum Thymi, Aristol, Carvacrol Iodide and Thymol Carbonate.

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

Span. and U.S. have also Thymolis Iodidum.

Tests.—Thymol melts at about 50° C. (122° F.); the *U.S.P.* and the *P.G.* give 50° to 51° C. (122° to 123·8° F.); the *B.P.* does not include a m.p. The sp. gr. is given by the *U.S.P.* as 1·030 at 25° C. (77° F.). The *U.S.P.* also states that when liquefied by fusion it is lighter than Water. The *B.P.* states that the crystals sink in cold Water, but at a temperature of 43·3° to 51·7° C. (110° to 125° F.) the crystals melt and rise to the surface. The *P.G.* states that the crystals sink in Water, but that melted Thymol floats on the surface of Water. Neither the *B.P.* nor the *U.S.P.* refers to the boiling point. It boils at 232° C. (449·6° F.). The *P.G.* states that it boils at 228° to 230° C. (442·4° to 446° F.). When mixed with an equal proportion of Camphor, Menthol or Chloral Hydrate it liquefies. It dissolves only sparingly in Water, but readily in Alcohol (90 p.c.), the alcoholic solution being optically inactive. The *B.P.* states that a solution of Thymol in half its bulk of Glacial Acetic Acid warmed with an equal volume of Sulphuric Acid yields a reddish-

violet colour. The *U.S.P.* and the *P.G.* state that a very small crystal of Thymol dissolved in 1 c.c. of Glacial Acetic Acid yields a liquid which on the addition of 6 drops of Sulphuric Acid and 1 drop of Nitric Acid yields a deep bluish-green colour when viewed by reflected light. It dissolves in 4 parts by weight of Sulphuric Acid at the ordinary temperature, forming a yellowish liquid which on gentle warming assumes a beautiful rose-red coloration. If this solution be poured into 10 volumes of Water, and the mixture allowed to stand with frequent intervals of shaking at a temperature of 35° to 40° C. (95° to 104° F.) in contact with an excess of Lead Carbonate, and the liquid be then filtered it yields a filtrate which on the addition of a little Ferric Chloride Solution assumes a beautiful violet colour. A distinctive reaction for Thymol and also for Carvacrol is the reddish-violet coloration produced on heating a small quantity of either with 0·1 of a gramme of Potassium Hydroxide and 20 drops of Chloroform. Thymol requires the addition of a few drops of Alcohol to effect solution before the colour is produced. The *U.S.P.* describes a somewhat similar test, 1 gramme of Thymol heated in a test-tube in a water-bath with 5 c.c. of Sodium Hydroxide Solution (10 p.c.) affords a clear colourless solution possessing a very slight reddish tint, becoming darker on standing, but without the separation of oily drops. On the addition of a few drops of Chloroform to this liquid it affords when agitated a violet coloration.

The more generally occurring impurities are Phenol, non-volatile organic impurities, and inorganic impurities. Phenol may be detected by the Ferric Chloride and the Bromine tests described in small type below. Non-volatile organic impurities and inorganic impurities by the residue test also described below.

Residue.—It is completely volatilised at the temperature of a water-bath, *B.P.* and *U.S.P.*; 0·1 gramme volatilised on a water-bath should not leave a weighable residue, *P.G.*

Ferric Chloride.—An alcoholic solution of Thymol should not be coloured by T.S. of Ferric Chloride, *U.S.P.*; an aqueous solution should be neutral and should not be coloured violet, *P.G.*

Bromine.—In an aqueous solution of Thymol, Bromine Water should produce a milky turbidity but not a crystalline precipitate, *P.G.*

Not Official.

GLYCERINUM THYMOL ALKALINUM.—Sodium Bicarbonate, 100 grains; Sodium Biborate, 200 grains; Sodium Benzoate, 80 grains; Sodium Salicylate, 40 grains; Menthol, 2 grains; Pumilio Pine Oil, 4 minims; Wintergreen Oil, 2 minims; Thymol, 4 grains; Eucalyptol, 12 minims; Alcohol (90 p.c.) 4 fl. drm.; Glycerin, 2 fl. oz.; Solution of Carmine, 40 minims; Distilled Water, *q.s.* to produce 20 fl. oz. Dissolve the salts in the Water, add the Glycerin and Solution of Carmine, then add the Oils previously dissolved in the Alcohol, and filter.—*Bournemouth Formulary.*

This has been incorporated in the *B.P.C.* under the title **Glycerinum Thymol Compositum.** *Syn.* Glycerinum Thymol Alkalinum, as follows:—Sodium Bicarbonate, 1; Sodium Biborate, 2; Sodium Benzoate, 0·75; Sodium Salicylate, 0·50; Menthol, 0·03; Oil of Pine, 0·05; Oil of Wintergreen, 0·03; Thymol, 0·05; Eucalyptol, 0·13; Alcohol (90 p.c.), 2·50; Glycerin, 10; Solution of Carmine, 0·50; Distilled Water, *q.s.* to produce 100.

LIQUOR ANTISEPTICUS.—Boric Acid, 2; Benzoic Acid, 0·1; Thymol, 0·1; Eucalyptol, 0·025; Oil of Peppermint, 0·05; Oil of Gaultheria, 0·025; Oil of Thyme, 0·01; Alcohol (95 p.c.), 25; Purified Talc, 2; Water, *q.s.* to make 100. Dissolve the Boric Acid in 70 of Water and the Benzoic Acid in 15 of Alcohol, pour the aqueous solution into the alcoholic solution. Then dissolve in a mortar the Thymol in the Oils; incorporate thoroughly the Purified Talc, and add with constant trituration the solution first prepared. Allow the mixture to stand for 48 hours with occasional agitation, filter, add 10 of Alcohol to the clear filtrate, and sufficient Water to make 100.—*U.S.P.*

This has been incorporated in the *B.P.C.* under the title of **Liquor Thymolis Compositus** with *synonym* Liquor Antisepticus, using 26·50 of Alcohol (90 p.c.) in place of 25 of Alcohol (95 p.c.).

Liquor Antisepticus (Volckmann).—Thymol, 1; Alcohol (90 p.c.), 10; Glycerin, 20; Distilled Water, 100.

LIQUOR THYMOL.—Thymol, 1; Alcohol (90 p.c), 100. This solution is very useful, as it may be diluted to any extent with Water without precipitation. Half a pint diluted to a gallon is about the same strength as a saturated aqueous solution.

THYMOL ANTISEPTIC DRESSINGS.—**Gauze**, 5 p.c., and **Wool**, 5 p.c.

UNGUENTUM THYMOL.—Thymol, 20 grains; Soft Paraffin, 1 oz.—*London.*

VAPOR THYMOL.—Thymol, 6 grains; Alcohol (90 p.c.), 60 minims; Light Magnesium Carbonate, 3 grains; Water, to 1 fl. oz.—*Throat.*

A teaspoonful in a pint of Water at 140° F. for each **inhalation.**

OLEUM THYMI.—The rectified Oil forms an almost colourless or yellow oily liquid, having a pleasant aromatic Thyme-like odour and a sharp aromatic taste. The crude Oil is a reddish or reddish-brown oily liquid possessing similar characteristics of taste and odour. It is the Oil distilled, principally from the fresh flowering herb, *Thymus vulgaris*. Should contain from 25 to 35 p.c. of Phenols (Thymol and Carvacrol). The rectified Oil soon darkens in colour on exposure to air and light, and should be kept in well-stoppered bottles of a dark amber tint.

The Oil is not official in the *B.P.* The *U.S.P.* and the *P.G.* describe it as the volatile Oil distilled from the leaves and flowering tops of *Thymus vulgaris*; both Pharmacopœias require it to contain not less than 20 p.c. by volume of Phenols.

Foreign Pharmacopœias.—Official in Fr., Ger., Jap., Russ., Span., Swiss and U.S.

Tests.—Oil of Thyme has a sp. gr. of 0·900 to 0·930; the *U.S.P.* states 0·900 to 0·930 at 25° C. (77° F.); the *P.G.* 0·900. It is slightly lævogyrate, the optical rotation being from −1° to −3°. The *U.S.P.* states not more than −3° in a 100 mm. tube at a temperature of 25° C. (77° F.). The *P.G.* does not give the optical rotation. It dissolves in half its volume of Alcohol (94·9 p.c.) and in 1 to 2 volumes of Alcohol (80 p.c.). The *P.G.* states that it is soluble in 3 parts by weight of a mixture of 100 parts by volume of Alcohol (90 p.c.) and 14 parts by volume of Water. The alcoholic solution yields with a drop of Ferric Chloride T.S. a greenish-brown coloration, changing to reddish. It is required by the *U.S.P.* to contain not less than 20 p.c. by volume of Phenol, as quantitatively determined by measuring the volume of unabsorbed non-Phenol Oil remaining after treating the Oil with a 1 in 20 Sodium Hydroxide. A measured quantity of 10 c.c. of the Oil introduced into a burette having a capacity of 50 c.c. and containing 40 c.c. of a 1 in 20 Sodium Hydroxide Solution; the burette is well corked and the mixture shaken thoroughly, and then set aside for from 12 to 24 hours, the drops of Oil adherent to the side of the burette are detached by gentle tapping and rotation. When the alkaline liquid has become clear, the volume of unabsorbed Oil is recorded and subtracted from the original amount of Oil taken, the difference multiplied by 10 indicates the percentage of Phenols in the Oil; the unabsorbed Oil should not measure more than 8 c.c.

The *P.G.* adopts a corresponding limit, but shakes a measured quantity of 5 c.c. of the Oil with 30 c.c. of a mixture of 10 c.c. of Sodium Hydroxide Solution (15 p.c. w/w), and 20 c.c. of Water in a graduated cylinder, and allows the mixture to stand until the alkaline solution has become clear; the volume of unabsorbed Oil is then read off. It should be subtracted from the volume of Oil used for the determination (5 c.c.), and the result multiplied by 20 which indicates the percentage by volume of Phenols present in the Oil. The Oil when shaken with 10 times its volume of hot Water, cooled, and the liquid filtered through a wet filter yields a filtrate which is not coloured bluish or violet by Ferric Chloride T.S., indicating the absence of Phenol.

A comparison of commercial Thyme and Origanum Oils is given (*P.J.* '08, i. 803); French Thyme Oil, from *Thymus vulgaris*, had a sp. gr. of 0·905 to 0·920 and contained from 18 to 45 p.c. of Phenol; Wild Thyme Oil, from *Thymus serpyllum* had a sp. gr. of from 0·890 to 0·905, contained practically no Phenols; a Spanish Thyme Oil, of doubtful origin, had a sp. gr. of from 0·930 to 0·950, and contained 50 to 70 p.c. of Phenols; Trieste Oil from *Origanum hirtum* had a sp. gr. of from 0·940 to 0·980 and contained from 60 to 85 p.c. of Phenols; Smyrna Oil from *Origanum Smyrnæum* had a sp. gr. of 0·915 to 0·945, and contained from 25 to 60 p.c. of Phenols; Cyprus Oil from *Origanum majoranoides* had a sp. gr. of 0·961 to 0·967, contained 78 to 84 p.c. of Phenols, whilst a sample of Sicilian Oil had a sp. gr. of 0·920, and contained 44 p.c. of Phenols.

ARISTOL (Thymol Iodide, $C_{20}H_{24}O_2I_2$, eq. 545·76).—A bright yellowish or brownish-yellow or reddish-yellow bulky powder with a slight aromatic odour somewhat resembling Iodoform. It is insoluble in Water and Glycerin, slightly soluble in Alcohol, readily soluble in Ether and Chloroform. It has been introduced as a substitute for Iodoform. Used successfully as a 10 p.c. Ointment, or by dusting the powder on ulcerating lupus, tinea, and syphilitic ulcers; in psoriasis and eczema a 10 p.c. solution in flexible collodion; as a pessary in ulceration of vagina or cervix.

It has been used as a dressing for burns.

Tests.—Aristol when heated is decomposed. When heated with concentrated Sulphuric Acid it is decomposed with the separation of Iodine. 1 decigramme when shaken with 20 c.c. of Water and filtered yields a filtrate which should not become more than opalescent on the addition of Nitric Acid and Silver Nitrate Solution. 5 decigrammes shaken with 10 c.c. of Water and filtered should afford a filtrate which should impart no blue colour to red Litmus paper, indicating the absence of alkalis. 5 decigrammes shaken with 10 c.c. of Water and the mixture filtered affords a filtrate which should not be coloured blue upon the addition of Starch Solution, indicating the absence of free Iodine. 0·5 of a gramme when ignited with free access of air should leave not more than 0·015 gramme of residue.

CARVACROL IODIDE.—A light yellow or reddish-brown powder, insoluble in Water and Alcohol, but soluble in Ether and in Chloroform, produced by the action of Iodine and Potassium Iodide on Carvacrol in solution.

As a germicide it is stated to be 5 times more powerful than Iodoform, and being more bulky is better adapted as a dusting powder. The substance which was prepared for many years by the author at the suggestion of Dr. Mortimer Granville is of a reddish-brown colour, but more recently a substance of a light yellow colour has been used in Germany as a substitute for Iodoform.

Iodocrol, a fancy name applied to the latter product.

THYMOL CARBONATE (Tyratol).—Forms a tasteless white powder. Recommended as a powerful vermifuge.—*C.D.* '01, ii. 344.

Arhovin, a product of Diphenylamine and Thymolbenzoic ester, in gonorrhœa (*B.M.J.E.* '07, i. 95); an ideal preparation in gonorrhœa, 1 to 2 p.c. solution in Olive Oil rapidly increased to 3 or 5 p.c.—*B.M.J.E.* '06, ii. 87.

THYROIDEUM SICCUM.

DRY THYROID.

A pale buff-coloured to light brown, somewhat hygroscopic, amorphous powder, possessing a peculiar distinctive meat-like odour. The powdered desiccated Thyroid gland is official in the *U.S.P.*, but not in the *P.G.* It is described as the Thyroid glands of the sheep (Ovis aries), Linné, freed from fat, cleaned, dried and powdered. The *B.P.* requires the healthy gland to be used, and after drying below 40° C. (104° F.) extracts the fat with Petroleum Ether; but it is not definitely stated in the *U.S.P.* monograph that the healthy gland should be employed, of course this would naturally be inferred; the *U.S.P.* states freed from fat, but does not indicate a method. 1 part of the desiccated Thyroid gland is stated to represent approximately 5 parts of the fresh gland.

Medicinal Properties.—Has been used with success in myxœdema and certain forms of insanity, obesity, goître and cretinism, psoriasis and chronic scaly skin diseases. Thyroid should never be given in exophthalmic goître.

Preparations.—*B.M.J.* '92, ii. 1384, 1459; *L.* '93, i. 273, 396; in goître—*L.* '95, ii. 169; *B.M.J.* '95, ii. 75; '96, i. 48; in cancer—*L.* '96, ii. 106, 162; in cretinism—*L.* '96, i. 853, 1446; '97, ii. 853; '02, i. 1565; *B.M.J.* '01, i. 1143; '02, i. 1259; in lupus—*B.M.J.* '94, i. 786; '96, ii. 1200; *L.* '96, ii. 41, 470; in psoriasis—*B.M.J.* '94, i. 186, 617; '95, i. 697; *L.* '95, i. 813; *B.M.J.E.* '95, ii. 35; ichthyosis—*B.M.J.* '95, i. 696; in pityriasis rubra—*B.M.J.* '95, i. 695; in rickets—*B.M.J.E.* '02, i. 40.

Oophorectomy combined with administration of thyroid has been recommended in inoperable carcinoma of the breast, in small doses, gradually increased to 15 grains daily.—*B.M.J.* '00, ii. 1161; '01, ii. 1145, 1439; '02, i. 508; *L.* '01, ii. 388, 966, 967; '02, i. 888; *T.G.* '99, 609.

12 p.c. of recoveries in cases of insanity which were not hopeless, but intractable by ordinary methods. It appears to be more efficacious in women than in men, and the best all-round results were connected with the insanity of child-bearing.—*B.M.J.* '00, ii. 818.

It powerfully affects the metabolism generally of the body cells, raising their tone and improving their vigour.—*B.M.J.* '01, ii. 1147.

A useful general *résumé* of our knowledge of the Thyroid Extract, forming portion of the Hunterian Oration on Organo-Therapeutics.—*L.* '02, i. 1091.

In puerperal eclampsia, 5 grains thrice daily for 6 days, followed by 5 grains every 3 hours for 17 days, an interval of 14 days, and then doses of 5 grains daily.—*B.M.J.* '02, i. 1214; *L.* '02, i, 824; ii. 459; '03, i. 307.

10 grains given in each case on admission, and 5 grains every 4 hours afterwards in puerperal eclampsia.—*L.* '04, i. 1057; *B.M.J.* '04, i. 895.

In psoriasis.—Initial dose should not exceed 5 grains once daily, and increment should be gradual and spread over 2 or 3 weeks, and should seldom exceed 15 grains a day, not giving more to patients who are not daily under observation.—*B.M.J.* '03, i. 656; *L.* '03, i. 785.

In glycosuria, 1½ grains in tablet form 3 times a day.—*L.* '03, ii. 187.

In a number of cases of confirmed epilepsy, in which preparations of the Thyroid gland were given over considerable periods, no appreciable result was detected either in the mental condition or in the frequency or severity of the fits.—*L.* '05, i. 710. It has a marked alterative influence in certain chronic affections of the skin. Its effect in cases of psoriasis is so evanescent as to make it of little practical value. It is of use, however, in quickening the healing of small idolent ulcers.—*B.M.J.* '05, i. 700.

Dose.—3 to 10 grains = 0·2 to 0·65 gramme.

Official Preparation.—Liquor Thyroidei.

Not Official.—Elixir Thyroidei, Liquor Thyroidei, Tablets of Thyroid Gland, Iodothyrin and Thyroglandin.

Foreign Pharmacopœias.—Official in Belg. (Thyroidea) and U.S.

Tests.—Dried Thyroid is not officially required to answer any definite chemical tests. The *U.S.P.* requires that 1 gramme of the desiccated Thyroid gland when mixed with an equal weight of pure Sodium Hydroxide and carefully fused in a silver dish until a white mass remains, Potassium Nitrate being added during the fusing to assist oxidation, yields, when the fused residue is dissolved in a small quantity of Water, a solution which, treated with 2 grammes of Sodium Nitrite acidified with concentrated Nitric Acid and shaken with 5 c.c. of Chloroform, imparts to the chloroformic liquid a decided pink to violet coloration. A cold extract of desiccated Thyroid glands treated with 2 grammes of Sodium Nitrite and acidified with strong Nitric Acid should not give the Iodine test on shaking with Chloroform. A preferable method of performing the test is that suggested (*Y.B.P.* 1883, 530; *P.J.* '98, ii. 546), and Chloroform is not found to be a suitable solvent for the Iodine, the sample is never burnt to ash, but always into Charcoal in the presence of a slight excess of Sodium Hydroxide; the risk of loss of Iodine by adding Potassium Nitrate to promote oxidation never being incurred. To liberate the Iodine from the aqueous solution of the charred residue a few drops (1 to 3) of Nitro-Sulphuric Acid are used, the Nitro-Sulphuric Acid being prepared by treating Starch with Nitric Acid and passing the Nitrous fumes into the Sulphuric Acid (1·043 sp. gr.) to saturation. Carbon Bisulphide is employed as a solvent for the liberated Iodine, and the tests are performed in large tubes of even bore and compared with standard solution of Potassium Iodide treated in the same manner. It is claimed by this method $\frac{1}{250000}$ part of Iodine is easily detected and measured, and up to $\frac{1}{100000}$ part the estimation is very accurate. When incinerated the *U.S.P.* states that desiccated Thyroid glands should yield not more than 6 p.c. of ash.

Preparation.

LIQUOR THYROIDEI. Thyroid Solution.

A liquid prepared from the fresh and healthy Thyroid gland of the sheep.

This preparation does not appear to be a success pharmaceutically, as it readily undergoes decomposition. The menstruum is equal parts of Glycerin and Distilled Water, containing about 1 of Phenol in 400 of the total volume.

Glycerin is stated not to dissolve out Thyroiodin.—*P.J.* '98, ii. 167; *C.D.* '98, ii. 288. This statement has been contradicted.—*P.J.* '98, ii. 482. But reaffirmed on strong evidence.—*P.J.* '98, ii. 546.

Tests.—When evaporated to dryness, the residue moistened with Sodium Hydroxide Solution and fused, the charred residue extracted with Water, the excess of alkali neutralised and the solution mixed with 1 to 3 drops of Nitro-Sulphuric Acid, as described under Thyroideum Siccum, and shaken with a few c.c. of Carbon Bisulphide a

decided violet coloration should be imparted to the Carbon Bisulphide Solution. No test for the presence of Iodine compounds is given in the *B.P.*

Not Official.

ELIXIR THYROIDEI (*Squire*).—A clear, aromatic, reddish liquid, containing the entire active principles of the Thyroid gland of the sheep. Each fl. drm. is equal to 1½ grains of dry Thyroid.

Dose.—1 to 2 fl. drm. = 3·6 to 7·2 c.c.

ELIXIR THYROIDEI (*Armour*).—Prepared with a Glycerin menstruum, 1 fl. oz. equivalent to 1 entire sheep's Thyroid gland.

Dose.—30 to 60 minims = 1·8 to 3·6 c.c.

LIQUOR THYROIDEI (*Squire*).—A transparent, pale reddish liquid, containing the entire active principles of the gland. Each fl. drm. is equal to 6 grains of dry Thyroid.

Dose.—10 to 60 minims = 0·6 to 3·6 c.c.

TABLETS OF THYROID GLAND.—Each tablet containing the equivalent of 1½, 2½ 5 or 10 grains of the entire substance of the Thyroid gland. **Tablets,** each containing 5 grains, equivalent to 2 grains of the desiccated substance.

IODOTHYRIN (Thyroiodin).—An amorphous light brown powder, insoluble in Water, soluble in Alcohol. Dissolved by alkalis and again precipitated on the addition of an acid. It is an organic compound of Iodine, constituting the active principle of the Thyroid gland, free from albuminoids, adjusted with Sugar of Milk to equal in strength the active substance of the fresh gland, and standardised to contain 0·3 p.c. of Iodine. Usually standardised by dilution with Milk Sugar, to contain a definite percentage of Iodine.—*L.* '96, i. 592, 666, 941; '97, ii. 855; *B.M.J.* '96, i. 722; *B.M.J.E.* '96, ii. 59; '97, ii. 8; *P.J.* '96, i. 161; ii. 215, 388; '97, i. 287.

Tests.—Iodothyrin when moistened with Sodium Hydroxide Solution and carefully charred leaves a carbonaceous residue which when dissolved in Water, the alkali neutralised with diluted acid and the solution treated with Nitro-Sulphuric Acid, as described under Thyroideum Siccum, yields when shaken with Carbon Bisulphide Solution a decided violet coloration.

THYROGLANDIN.—A light yellowish-brown or brown, somewhat hygroscopic, amorphous powder, which is stated to consist of the entire active constituents of the gland. It contains the Iodoglobulin obtained from the fresh glands by simple treatment with Water, together with the total amount of Iodothyrin obtained by subsequent treatment of the residual glands with 1 p.c. Soda Solution and exact neutralisation with Hydrochloric Acid.—*P.J.* '98, ii. 167, 654; *C.D.* '98, ii. 288, 970; *B.M.J.* '98, ii. 79.

Dose.—1 to 5 grains = 0·06 to 0·32 gramme.

Tests.—Thyroglandin when moistened with Sodium Hydroxide Solution and carefully charred leaves a carbonaceous residue which when dissolved in Water, the alkali neutralised with diluted acid and the solution treated with Nitro-Sulphuric Acid, as described under Thyroideum Siccum, yields when shaken with Carbon Bisulphide Solution a decided violet coloration.

Thyrodectin is stated (*B.M.J.* '07, i. 756) to be the dried blood of animals from which the Thyroid glands have been removed. A reddish-brown powder, put up in capsules containing 5 grains each.

TINCTURÆ.

TINCTURES.

Most of the Tinctures of the British Pharmacopœia are directed to be made either by 'maceration' or by 'percolation'; the number in each class is nearly equal, but if anything the latter predominate; about a dozen are made by simple solution, or mixing the ingredients.

The official directions for maceration and percolation are much the same as in 1864; for percolation the ingredients are macerated with a portion of the menstruum for 48 hours, and then percolated with more of the same, the marc is pressed and the whole yield of liquid made up to the required volume; for maceration, the ingredients are mixed with the required quantity of menstruum, and after 7 days strained, pressed, and if necessary the liquid is filtered; in 1864, 1867, and 1885, the macerated tinctures were finally made up to a volume, but in 1898 this was omitted.

The degrees of comminution appeared first in the 1885 edition.

The following *B.P.* Tinctures are standardised:—Cinchona, Jalap, and Opium; the Tinctures of Belladonna and Nux Vomica are made from standardised Fluid Extracts; Ammoniated Tincture of Opium and Compound Tincture of Camphor are made from standardised Tincture of Opium; Compound Tincture of Cinchona from standardised Tincture of Cinchona.

The strengths of the various Tinctures have been adjusted so as to have a dosage of 5 to 15 minims for the potent Tinctures, and 30 to 60 for the less potent.

With regard to the Tinctures contained in the Continental Pharmacopœias a comparison is given under each separate Tincture in the *Companion* paragraphs commencing Foreign Pharmacopœias. The Potent Tinctures given therein are compared with the standards adopted by the *Brussels Conference* and the alcoholic strength of the Tincture is also given.

The tabulated comparison of the chief standardised potent preparations of the British, United States, German and French Pharmacopœias given at the commencement of this book shows at a glance the alkaloidal strengths and the standards for the Tinctures official in the four Pharmacopœias with which the present volume is chiefly concerned, and which are probably of the most material interest to English readers.

The Tinctures or Teintures Alcooliques of the *Fr. Codex* (1908) are liquid medicaments resulting from the solvent action of Alcohol on various substances, they consist of 'simple' or 'compound' Tinctures, simple being prepared with the single substance, the compound where several substances are used in the preparation. They are prepared by maceration or percolation, Alcohol 60 p.c., 70 p.c., 80 p.c., or 95 p.c., being employed according to the nature of the drug to be exhausted. All simple tinctures of heroic drugs, that is to say, of very active drugs are prepared by percolation with Alcohol (70 p.c.), and in such a manner that the weight of the resulting tincture is equal to ten times the weight of the substance employed, in accordance with the *Brussels Convention*, 1902.

Prescribing Notes.—*Most of the Tinctures mix readily with Water, but resinous Tinctures under similar circumstances require the addition of Mucilage of Gum Acacia, which is the best all-round emulsifying agent for this purpose. It gives good results with all the Tinctures except Compound Tincture of Benzoin, which is very difficult to diffuse in Water; neither Mucilage of Gum Acacia nor Mucilage of Tragacanth, by itself, gives a satisfactory emulsion with this Tincture; the best effect is obtained by the use of Compound Tragacanth Powder, 60 grains of which will diffuse 3 fl. drm. of Compound Tincture of Benzoin, in 3 fl. oz. of Water.*

The quantity of Mucilage required for resinous Tinctures will depend upon the proportion of Tincture to the Water or other aqueous fluid; 1 fl. drm. of Mucilage of Gum Acacia is sufficient for 1 fl. drm. of the following Tinctures in 1 fl. oz. of Water:—Benzoin, Cubebs, Ammoniated Guaiacum, or Tolu. The following Tinctures require only about half this quantity:—Asafetida, Cannabis Indica, Jalap, Myrrh, or Sumbul. When Tincture of Hydrastis or Tincture of Podophyllum is prescribed with an aqueous solution of mineral salts, it is better to

add Mucilage of Gum Acacia. The Mucilage should always be diluted with 3 *or* 4 *times its bulk of Water before adding the Tincture.*

Mucilage of Tragacanth is also useful for the purpose of diffusing the Resin of the Tinctures, especially for Tincture of Jalap, and Tincture of Cannabis Indica when prescribed with salts.

Quinine is sometimes prescribed in mixtures under conditions which cause a precipitation of the alkaloid itself, or one of its sparingly soluble salts; in such cases the addition of 2 *or* 3 *fl. drm. of Mucilage of Gum Acacia to the* 6 *or* 8 *oz. mixtures will prevent the aggregation of the precipitate which would otherwise occur.*

Not Official.

TINOSPORA.

The dried Stem of *Tinospora cordifolia*, Miers., is official in the *Ind.* and *Col. Add.* for India and the Eastern Colonies; also **Infusum Tinosporæ** (1 in 10), dose ½ to 1 fl. oz. = 14·2 to 28·4 c.c.; **Liquor Tinosporæ Concentratus** (1 in 2), dose 30 to 60 minims = 1·8 to 3·6 c.c.; and **Tinctura Tinosporæ** (1 in 5), dose 30 to 60 minims = 1·8 to 3·6 c.c.

Not Official.

TODDALIA.

The dried Root-bark of *Toddalia aculeata*, Pers., is official in the *Ind.* and *Col. Add.* for India and the Eastern Colonies; also **Infusum Toddaliæ** (1 in 10), dose 1 to 2 fl. oz. = 14·2 to 28·4 c.c.; **Liquor Toddaliæ Concentratus** (1 in 2), dose 30 to 60 minims = 1·8 to 3·6 c.c.

TRAGACANTHA.

TRAGACANTH.

Fr., Gomme Adragante; Ger., Traganth; Ital., Gomma Adragante; Span., Goma Tragacanto.

Thin, translucent, white, or pale yellowish-white odourless flaky shreds or filaments, possessing a somewhat horny appearance. It is a gummy exudation obtained by incision from *Astragalus gummifer*, Labill., and some other species of Astragalus.

The characteristic of the Syrian Tragacanth is the form of ribbon-like flakes in which it occurs, and its comparative freedom from Starch.

Pure Tragacanth gives a blue coloration with Iodine, varying in depth in different samples, but in any case it is much too faint to be confounded with added Starch.

Medicinal Properties.—Demulcent. Used for the suspension of heavy insoluble powders in liquids; 10 grains of the Compound Powder of Tragacanth are used for each fl. oz. of Water.

1 part of Tragacanth gives more viscosity to Water than 25 parts of Gum Acacia.

Official Preparations.—Glycerinum Tragacanthæ, Mucilago Tragacanthæ and Pulvis Tragacanthæ Compositus; contained in Confectio Sulphuris, Mistura Cretæ, Mistura Guaiaci, Pilula Quininæ Sulphatis, and Pulvis Opii Compositus. The **Mucilage** is contained in Lotio Hydrargyri Nigra.

Not Official.—Bassorin, Gelanthum, and Glucantha.

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

Descriptive Notes.—Tragacanth is found in various forms in commerce. The most valuable consists of semi-translucent thin flakes, known in commerce as Syrian Tragacanth, but imported from Persia. This is the official kind. It is 1 to 3 in. (25 to 75 mm.) or more in length and ¼ to 1 in. (6 to 12 mm.) in width, more or less contorted, white, translucent, horny, not easily broken but slightly flexible. The *P.G.* gives the dimensions as at least 0·5 cm. broad and 1 to 3 mm. thick, and its appearance as white and translucent. It is from 1 to 3 mm. thick and is more easily pulverisable by a heat of 50° C. (122° F.), *U.S.P.* Unlike Gum Arabic, it contains Starch grains. The kind known as Smyrna Tragacanth, which is next in quality, is more opaque and occurs in shorter, rather thicker flakes, which, owing to their greater opacity, have a faint, yellowish-white appearance. Small, slender strips are known as Vermicelli Tragacanth. Large, thicker pieces with a reddish tinge are known in trade as Gum Dragon and are used by shoemakers for smoothing rough leather, and for other technical purposes. A variety in small rounded pieces is known as Hog Gum or Caramania Gum, and is used for adulterating small Smyrna Tragacanth. It appears to be derived from *Astragalus Heratensis*, Bunge.

Tests.—Tragacanth is sparingly soluble in Water, but swells up into a gelatinous mass which gives a violet or blue coloration with Iodine Solution, varying in depth in different samples, but in any case the coloration is much too faint to be confounded with that of added Starch. The *B.P.* states that it may be tinted violet or blue by Iodine Solution. The *U.S.P.* and the *P.G.* state that Tragacanth treated with 50 parts of Water swells up and gradually forms a cloudy gelatinous mass, which, when warmed on a water-bath with Solution of Sodium Hydroxide assumes a yellow coloration. In performing the test the *P.G.* employs powdered Tragacanth, the *U.S.P.* Tragacanth. The *U.S.P.* states that this gelatinous mass is tinged blue on the addition of Iodine T.S.; the *P.G.* that when the Tragacanth mucilage is diluted with Water, and the fluid filtered, Iodine Solution added to the residue on the filter produces a blackish-blue coloration, the filtered fluid is not coloured blue by Iodine Solution. The *U.S.P.* states that the addition of Alcohol (94·9 p.c.) to the fluid portion causes a precipitate, but the liquid is not coloured blue by Iodine T.S. Tragacanth leaves when ignited with free access of air from 2 to 3 p.c. of ash, and 4 p.c. is rarely exceeded.

Preparations.

GLYCERINUM TRAGACANTHÆ. GLYCERIN OF TRAGACANTH.
Tragacanth, in powder, ½; Glycerin, 1½; Distilled Water, ½.

Used as a **pill excipient**, but the following is better for that purpose:—Tragacanth, in powder, 1; Glycerin, 6; rub together and keep for 2 or 3 days before use to allow it to stiffen.

'Diluted Glucose' is better than either.

Official in Dutch, Tragacanth 1, Glycerin 9.

MUCILAGO TRAGACANTHÆ. MUCILAGE OF TRAGACANTH.

Mix 60 grains of Tragacanth, in powder, with 2 fl. drm. of Alcohol (90 p.c.), in a bottle; add Distilled Water *q.s.* to form 10 fl. oz. and shake immediately. (1 in 74)

Foreign Pharmacopœias.—Official in Dutch, 1 in 50; Fr., 1 in 10; Ital. and Port., 1 in 10, also 1 in 100; Mex., 1 in 20; Jap., Tragacanth 1, Glycerin 5, Tepid Distilled Water 94; Russ., Tragacanth 4, Acacia 1, Water 500; U.S., Tragacanth 6, Glycerin 18, Water *q.s.* to make 100.

PULVIS TRAGACANTHÆ COMPOSITUS. COMPOUND POWDER OF TRAGACANTH.

Tragacanth, 1; Gum Acacia, 1; Starch, 1; Refined Sugar, 3. (1 in 6)

Dose.—20 to 60 grains = 1·3 to 4 grammes.

Not Official.

BASSORIN.—Gum Tragacanth 5, Glycerin 2, Water 93.—*St. John's.*

It is also known as **Linimentum Exsiccans.**

It can be medicated with 5 p.c. of Salicylic Acid, Hydronaphthol, or Thioresorcin; with 10 p.c. of Acid Boric, or with 30 p.c. of Ichthyol, Resorcin or Precipitated Sulphur.

Under the name of **Bassorin**, which is properly applied to the insoluble part of Tragacanth, there was introduced from the Continent a few years ago an ointment-basis made by mixing 1 part of powdered Tragacanth with spirit to wet it, then adding 50 parts of Glycerin (by weight) and heating until clear. Martindale quotes the following formula:—Tragacanth 5, Glycerin 2, Rectified Spirit 10, Water to 100. In the spirit contained in a wide-mouthed bottle diffuse the Tragacanth and add the Water, then add quickly the Glycerin diluted with as much Water, and shake well.—*Pharm. Form.*

This has been incorporated in the *B.P.C.*

GELANTHUM (*Unna*).—A firm basis used in dermatology, consisting of Gelatin, Tragacanth, Glycerin and Water.

GLUCANTHA.—Tragacanth, in powder, 240 grains; Water, 240 minims; Syrup of Glucose, 2 oz. Pill Excipient.—*Guy's.*

Not Official.

TRIFOLIUM.

CLOVER.

A **fluid extract** is made from the dried *Trifolium pratense*, L., and from this a **syrup**, a teaspoonful of which 3 or 4 times a day is serviceable in whooping-cough.

The *Trifolium fibrinum* official in the *P.G.* consists of the leaves of *Menyanthes trifoliata*, L.

Not Official.

TRIMETHYLAMINA.

TRIMETHYLAMINE.

C_3H_9N, eq. 58·67.

As supplied in commerce, it is a colourless or pale yellow transparent solution, possessing a strong distinctive odour, and a strongly alkaline reaction. It occurs somewhat frequently in both the animal and vegetable kingdoms. It is a constituent of the herring-brine, and has been detected in urine, unputrified blood of the calf and other animal fluids. It has been detected in Arnica root, the blossoms of the Pear, Whitethorn, Hawthorn and

Wild Cherry. The Trimethylamine of Ergot is probably a decomposition-product of Choline. It is also a product of the dry distillation of certain alkaloids, Wood, etc., and especially of the vinasses or residues left after the distillation of the spirit from fermented beetroot molasses.

Propylamine is sometimes used as a synonym for Trimethylamine, but although isomeric with this substance its use as a synonym is not justified.

It is miscible with Water and with Alcohol (90 p.c.). It forms crystallisable salts. The Hydrochloride is the one chiefly used in medicine. Pure Trimethylamine is a gas at ordinary temperatures.

Tests.—Trimethylamine has a sp. gr. at 0° C. (32° F.) of 0·673. It boils between 9° and 10° C. (48·2° and 50° F.). It is inflammable. It mixes readily with Water, forming a solution which is strongly alkaline in reaction towards Litmus paper. It combines with Carbon Bisulphide with evolution of heat. A glass rod moistened with Trimethylamine evolves white fumes when brought into contact with the vapour of Hydrochloric Acid. It combines with acids to form salts which are mostly crystallisable. Trimethylamine may be distinguished from primary and secondary Methylamines by its negative reaction with Alcoholic Potash and Chloroform, that is to say, it does not evolve the characteristic and highly disagreeable odour of the corresponding Carbamine or Isonitrile when boiled with Alcoholic Potassium Hydroxide Solution and Chloroform; by yielding no reaction when mixed with 1½ times its weight of Ethyl Oxalate (previously dried over Calcium Chloride); and by not affording a volatile Nitrosamine when distilled with Nitrous Acid, and by its solution in excess of Hydrochloric Acid being precipitated by Potassium Ferrocyanide. When neutralised with Acetic Acid the aqueous solution of Trimethylamine yields with Mercuric Chloride Solution a white precipitate. It gives with Iodine and with Iodo-Potassium Iodide (Wagner's) Solution a yellow precipitate; with Tannic Acid Solution a white precipitate, with Potassio-mercuric Iodide (Mayer's) Solution a white precipitate, and with Phospho-molybdic Acid a pale yellow precipitate. It may be determined by titration with Normal Volumetric Sulphuric or Hydrochloric Acid Solution, using Litmus Solution as an indicator of neutrality. 1 c.c. of the Normal Volumetric Acid Solution corresponds to 0·05867 gramme of absolute Trimethylamine.

TRIMETHYLAMINÆ HYDROCHLORIDUM.—Translucent, colourless, very deliquescent crystals, possessing a strong distinctive odour; soluble in Water and in Alcohol (90 p.c.). It should be kept in well-stoppered bottles of a dark amber tint in a cool atmosphere and protected as far as possible from contact with the air, as it is very deliquescent. It has been used in rheumatism and gout.

Dose.—1 to 5 grains = 0·06 to 0·32 gramme.

Tests.—Trimethylamine Hydrochloride dissolves readily in Water, forming a solution which has a neutral reaction towards Litmus paper. When mixed with Sodium Hydroxide Solution it evolves a powerful distinctive odour of Trimethylamine; the base separated from the salt should answer the tests distinctive of Trimethylamine given under that heading. It should dissolve in 10 parts of Absolute Alcohol, indicating the absence of Ammonium Chloride. The odour evolved on mixing it with Sodium Hydroxide Solution should possess the distinctive odour of Trimethylamine, and not an ammoniacal one. It should leave no weighable residue when ignited with free access of air.

Not Official.

TRITICUM.

COUCH GRASS.

The Rhizome of *Agropyrum repens*, Beauv., gathered in the spring and deprived of the rootlets.

Under the title **Agropyrum**, it is official, together with a **Liquid Extract** (1 in 1), in the *Ind.* and *Col. Add.* for Australia, the Eastern and North American Colonies.

Medicinal Properties.—Diuretic, and urinary sedative in cystitis and gonorrhœa.

Official in U.S.; Austr., Belg. and Swiss (Rhizoma Graminis), Fr. (Chien-dent), Mex. and Port. (Grama Franceza).

DECOCTUM TRITICI.—Triticum, cut small, 1 oz.; Water, 20 fl. oz.; boil 10 minutes, and strain when cold.

Dose.—4 to 8 fl. oz. = 113·6 to 227·2 c.c. 3 times a day.
Fr., Tisane 1 in 50.

A corresponding preparation, **Decoctum Agropyri**, dose ½ to 2 fl. oz. = 14·2 to 54·8 c.c., is official in the *Ind.* and *Col. Add.* for Australia, the Eastern and North American Colonies.

EXTRACTUM TRITICI LIQUIDUM.—Triticum, in No. 20 powder, 10; percolate with Water until exhausted; evaporate the percolate to 15, and add 5 of Rectified Spirit; set aside for 48 hours, filter, and make up to 20 with a mixture of Water 3 and Rectified Spirit 1.

Dose.—1 to 6 fl. drm. = 3·6 to 21·3 c.c.
More easily prepared, and without heat (which is very detrimental to the Extract), by percolation with the above diluted Alcohol, so as to obtain 20 of finished product from 10 of the drug.

Fluidextractum Tritici.—Percolate 100 of Triticum with boiling Water until exhausted; evaporate the percolate to 75, and having added to it 25 of Alcohol (95 p.c.), mix well and set it aside for 48 hours, then filter the liquid and add sufficient of a mixture of Alcohol (95 p.c.) 1 and Water 3, to make 100. Average dose.—2 fl. drm. = 7·1 c.c.—*U.S.P.*

An **extract** is Official in Austr., Belg., Fr. and Mex.

TROCHISCI.

There are several lozenges in the Pharmacopœia. They are made with four different bases.

The **Simple Basis** consists of 496 of finely powdered Refined Sugar and 19½ of Powdered Gum Acacia, made into a paste of 35½ of Mucilage of Gum Acacia and a small quantity of Distilled Water.

Rose Basis is similar to the above, omitting 17½ of the Mucilage of Gum Acacia, and employing official Rose Water for making the paste.

The **Tolu Basis** is similar to the Simple Basis, substituting 10½ of Tincture of Balsam of Tolu and 10½ of Distilled Water for a portion of the Sugar.

Fruit Basis is similar to the Simple Basis, substituting 56¾ of Black Currant Paste for the same quantity of Sugar.

Compressed Lozenges.—The general method is to granulate the mixture of medicament, Sugar and Gum, by means of Theobroma Emulsion (p. 1191) and highly compress the dried granules (*C.D.* '03, ii. 231). The advantage of avoiding the application of heat is obvious in the case of volatile substances, such as Phenol and essential Oils.—*P.J.* '03, ii. 158.

Not Official.

TYLOPHORÆ FOLIA.

The dried Leaves of *Tylophora asthmatica*, dose ¼ to 2 grains = 0·016 to 0·13 gramme as an expectorant; 15 to 30 grains = 1 to 2 grammes as an emetic; are official in the *Ind.* and *Col. Add.* for India and the Eastern Colonies.