Not Official.

ULEXINE.

Syn.—CYTISINE.

A crystalline alkaloid prepared from *Ulex Europæus*, L., the common gorse or furze.

Solubility.—Freely soluble in Water and Chloroform; insoluble in pure Ether.

The **Nitrate, Hydrochloride,** and **Hydrobromide** are crystalline salts readily soluble in Water.

Medicinal Properties.—Diuretic; useful in cardiac dropsy.

Dose.—$\frac{1}{20}$ to $\frac{1}{15}$ grain = 0·0032 to 0·0042 gramme dissolved in 60 minims of Water.

Ulexine temporarily masks the action of Strychnine.—*T.G.* '87, 280, 690.

Not Official.

ULMUS.

Under this title the dried inner bark of *Ulmus campestris*, L., was official in *B.P.* '64 and '67; the dried bark of *Ulmus fulva*, Mich., deprived of its periderm, is official in the *U.S.P.* The value of both the barks depends upon the mucilage which they contain; that of the *Ulmus fulva* is stated also to preserve fatty substances from becoming rancid.

Decoctum Ulmi (*B.P.* '67), Elm Bark 1, Water 8, boil for 10 minutes, strain and make up to 8, dose 2 to 4 fl. oz. = 56·8 to 113·6 c.c. 3 or 4 times daily.

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

Mucilago Ulmi (*U.S.*), 6 of Slippery Elm (Ulmus fulva) in 100 of Water, digest in a covered vessel, on a water-bath for one hour, and strain.

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

UNGUENTA.

For the preparation of the Ointments of the British Pharmacopœia, various bases are used, *e.g.*, Soft Paraffin, Hard Paraffin, a mixture of Hard and Soft Paraffins, Lard, Benzoated Lard, Beeswax and Lanolin.

In the case of the ointments containing alkaloids, Oleic Acid is used with the object of dissolving the alkaloid. In India and the Colonies, when the ointment would be too soft, owing to the warmer climate, indurated Lard, prepared Suet or Beeswax may be employed for the purpose of stiffening the ointment, provided such admixture does not affect the proportion of active ingredient.

Eye Ointments.—The basis for these is neutral yellow Soft Paraffin, which has been melted and strained through fine muslin. The medicament in very fine powder should be first rubbed with a small portion of the Paraffin; and in the case of alkaloids the Paraffin may be warmed (not above 50° C.) until solution is effected.—*St. Thomas's.*

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

Ointments appear in the Foreign Pharmacopœias, under the following generic titles:—

Austr., Belg., Dan., Dutch, Ger., Hung., Jap., Norw., Russ., Swed., Swiss and U.S., Unguenta; Fr. (Pommades); Ital. (Pomato); Mex., Port. and Span. (Unguento).

Not Official.

URANIUM NITRATE.

Pale yellow, rhombic crystals, readily soluble in Water. It should be kept in well-stoppered bottles and protected as far as possible from the light. The *B.P. Appendix* describes it as the crystals of pure Uranium Nitrate of commerce.

Used in diabetes.—*B.M.J.* '95, ii. 467; '97, ii. 1044; *Pr.* lxi. 257.

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

Tests.—Uranium Nitrate when heated melts, loses its Water of crystallisation, and when more strongly heated loses also Nitric Acid. It dissolves readily in Water, forming a clear solution which is acid in reaction towards blue Litmus paper. This aqueous solution affords with Ammonium Hydrosulphide Solution a chocolate-brown precipitate insoluble in excess of the reagent. Ammonium, Potassium or Sodium Hydroxide Solution produces a yellow precipitate insoluble in excess of the reagent. In the presence of Tartaric Acid these reagents do not produce a precipitate, the precipitate produced by Ammonium Hydroxide Solution is soluble in a solution of Ammonium Carbonate. Ammonium, Potassium or Sodium Carbonate Solution yields a light yellow precipitate readily soluble in excess of the reagents. Potassium Ferrocyanide Solution produces a reddish-brown precipitate in sufficiently concentrated solution, or a reddish-brown coloration even in highly diluted solutions; Potassium Ferricyanide Solution produces no change; Sodium Phosphate Solution, more particularly in the presence of Sodium Acetate and Acetic Acid, produces a whitish precipitate. A standard solution of Uranium Nitrate is used for the determination of Phosphoric Acid, Potassium Ferrocyanide Solution being employed as an indicator.

URANIUM SALICYLATE.—A pale yellowish-green crystalline salt; seems (*L.* '05, i. 387) to be better tolerated in cancer than either the **Acetate** or **Nitrate.** Dose, 5 to 20 grains = 0·32 to 1·3 grammes.

The Uranium compounds have lately received a very considerable amount of attention; the metal first gave rise to a suspicion of the existence of a radio-active property in elements, and this suspicion was followed by M. et Madame Curie's discovery of the radio-active element, Radium, in pitchblende.

RADIUM.—A lengthy and intricate process for the separation of this radio-active element has been fully recorded by its discoverers, M. et Madame Curie, in a thesis presented to the Faculté des Sciences de Paris, and reprinted in series in the *Chemical News*, and summarised, *L.* '03, ii. 966. The salt chiefly employed in medicine is the **Radium Bromide**, which is usually supplied in tubes, each containing 0·005 mg. (about $\frac{1}{14}$ grain). It is a white salt, but gradually becomes coloured.

The peculiar action of the rays on tissues has been utilised in the treatment of carcinomatous and sarcomatous growths, in epithelioma, psoriasis and lupus.—*L.* '03, ii. 271, 927, 966, 1388; *B.M.J.E.* '03, ii. 31.

Applied to the skin for 20 to 40 minutes or longer in lupus, rodent ulcer and superficial epitheliomata.—*B.M.J.* '03, ii. 199.

Treatment of consumption by the rays from Radium and Thorium.—*B.M.J.* '03, ii. 197.

It has been discovered in the waters of Bath and Buxton. The deposits from these mineral waters were estimated each to contain about the same amount, the amount in the deposit being relatively much greater than that in solution.—*B.M.J.* '04, i. 797.

17 cases of cancer treated by the application of 30 mg. enclosed in a vulcanite capsule covered with talc. It appears that the emanations from Radium can only act upon the rapidly growing cells, and that the older cells, especially if surrounded by fibrous tissue, are less and less easily affected, and if there be an excess of fibrous tissue, the cells are not at all affected.—*L.* '04, i. 1047.

Relief was obtained in asthma by a 20 minutes' application on the first, followed by a 25 and 30 minutes' application respectively on two successive days.—*B.M.J.* '04, ii. 1234.

In dermatology: 10 mg. of Radium Bromide applied in several sittings daily.—*B.M.J.E.* '05, ii. 15.

In the treatment of rabies (*B.M.J.* '05, ii. 36), animals were inoculated with the virus and exposed for some days to the action of Radium. Controls inoculated with virus of equal strength and not submitted to the same treatment all died.

A record of 9 cases of cancer of the œsophagus treated with Radium. In 6 cases the treatment was so far successful as to cause some widening of the stricture. In the other 3 no improvement took place. ½ to 1 hour's application is made daily or every other day for several weeks.—*B.M.J.* '05, ii. 92.

6 cases of malignant tumour, 5 of which were carcinomata, and 1 of melano-sarcoma, treated by 10 mg. of the **Bromide**. In no case did the treatment prove of any value. Not recommended for cancer of any kind. In operable cases the knife yields infinitely more promise, and in inoperable cases Radium only does harm. All the lupus cases were cured.—*B.M.J.E.* '05, i. 39.

1 mg. of the **Bromide** enclosed in a thin glass tube of 3 cm. length and 2 mm. diameter, in the treatment of granulation of the conjunctiva.—*B.M.J.E.* '05, i. 43. The exposure was carried out daily for 10 to 15 minutes, and resulted in cure.

In the treatment of rodent ulcer. A tube containing 5 mg. of the **Bromide** applied by tying the Radium tube between the ulcer and a layer of gutta-percha tissue, the durations of the applications averaging 20 minutes. Whether the results will be as permanent as after the usual treatment has yet to be proved (*B.M.J.* '05, ii. 9); but no one seeing the new skin can have any doubt of the greater perfection of cosmetic effect over any treatment hitherto known.

5 mg. **Radium Sulphate** of 500,000 units attached with enamel varnish to a plate of Copper 1 in. square, applied for 30 minutes to each lobe of a trilobate tumour affecting the upper eyelid, the exposure being repeated 3 days afterwards. The tumour had melted away, leaving only a small ulcer.—*L.* '05, ii. 548.

A method of coating instruments, celluloid rods, discs, etc., with Radium (*L.* '05, ii. 545), a salt of the latter being dissolved in a suitable volatile solvent tinted with an aniline dye and the instrument dipped in.

Thorium Nitrate, Thorium Lactate, and Thorium Salicylate are salts of the rare metal, Thorium, which have been introduced and which have found more or less use commercially.

Not Official.

UREA.

CARBAMINE, CARBONYLAMIDE.

CH_4N_2O, eq. 59·67.

Colourless, transparent, almost odourless, somewhat hygroscopic, prismatic crystals, possessing a cool, saline taste.

Solubility.—1 in 1 of Water; 1 in 7 Alcohol (90 p.c.).

Introduced as a diuretic; it can dissolve uric acid calculi.—*L.* '01, i. 694, 1672; '01, ii. 1567, 1709; '02, i. 548; '02, ii. 1383, 1486; '03, ii. 1017; *B.M.J.* '02, ii. 1235.

20 grains 3 times a day gradually increased to 120 grains 3 times daily, combined with the application of the X-rays, in lupus vulgaris.—*L.* '02, i. 659.

It is stated to possess the power of dissolving coagulated proteids.—*L.* '02, ii. 527; *P.J.* '03, i. 385.

Dose.—20 to 60 grains = 1·3 to 4 grammes, 3 or 4 times daily.

Hypodermically it may be given in 40-grain doses dissolved in 4 fl. drm. sterilised Water.

Tests.—Urea melts at about 132·5° C. (270·5 F.), and at a temperature of 150° to 160° C. (302° to 320° F.) it is decomposed with the evolution of Ammonia and formation of Biuret. It dissolves readily in Water, forming a solution which is neutral in reaction towards Litmus paper. At the ordinary temperature the solution has no tendency to change, but on boiling it is decomposed with the formation of Ammonium Cyanide. Urea when heated in a test-tube melts, and then evolves Ammonia; when fused with Potassium or Sodium Hydroxide or

ignited with Soda-Lime, Ammonia is also evolved, recognised by its distinctive odour and by its reaction on a piece of moistened red Litmus paper which it turns blue. When heated for some time to a temperature not exceeding 160° C. (320° F.), cooled, the residue dissolved in Water, mixed with Sodium Hydroxide Solution and then with diluted Cupric Sulphate Solution, a violet or red coloration is produced; this reaction is known as the Biuret test. When moistened with concentrated solution of Furfural, and a drop of Hydrochloric Acid (sp. gr. 1·1) a fine violet coloration is produced. An aqueous solution when heated with Silver Nitrate affords a white precipitate of Silver Cyanide. Urea is not precipitated by Mercuric Chloride Solution, nor by a solution of Mercuric Acetate. It is not precipitated by Tannic Acid Solution, by Potassio-mercuric Iodide (Mayer's) Solution, by Iodo-potassium Iodide (Wagner's) Solution, Picric Acid Solution, nor the other general reagents for alkaloids. It yields no reaction with either neutral or basic Lead Acetate Solution; it does not reduce Fehling's Solution even on boiling. When mixed with Sodium Hypobromite Solution it evolves Nitrogen, and this reaction is utilised for its determination when necessary, the absence of substances similarly evolving Nitrogen on treatment with Hypobromite being first assured. When ignited with free access of air it should leave no weighable residue.

UROL (Urea Quinate).—Large, colourless, prismatic crystals, having an acid, bitter taste; readily soluble in Water and in Alcohol (90 p.c.).

It has been recommended in the Uric Acid diathesis.

VERONAL. Diethyl-malonyl Urea $C_2H_5C_2H_5C_4N_2H_2O_3$, eq. 182·80.—Colourless, odourless crystals, or a white, crystalline powder, possessing a faintly bitter taste.

Solubility.—1 in 160 of Water; 1 in 8½ of Alcohol (90 p.c.).

A hypnotic. It is given a high place (*B.M.J.E.* '04, ii. 96) as a sleep-producing agent, the effect being chiefly sedative and of little value where there is pain. Although a good hypnotic (*B.M.J.* '04, ii. 1679), it seems to take time to act, and to have a cumulative action, unfavourable results following the administration of 3 doses of 10 grains given at intervals of 1 hour. In a case of mental excitement (*B.M.J.* '04, ii. 1784), where 10 grains thrice daily had been taken for a week toxic symptoms followed. 2 doses of 10 grains each caused urticaria, lasting 3 days, and in the other case local œdema lasting a week.—*B.M.J.* '04, ii. 1736.

A most satisfactory hypnotic; very seldom, except in mental cases, will more than 7 or 8 grains be required for a dose; writers differ very widely as to the dose; best given in hot fluid.—*F.T.* '07, 73.

It acts with comparative certainty in small doses and without deleterious effects. The best of the non-Chlorine hypnotics, and ranks with Chloral.—*B.M.J.* '05, ii. 250.

Best given periodically, and often varied. The smallest effective dose should be used in the commencement, and the drug removed from the system at the earliest opportunity.—*M.P.* '05, ii. 568.

The importance of combining anodynes with hypnotics for administration at night time where there is pain pointed out (*B.M.J.* '05, ii. 1008). A small dose of Aspirin added to Trional or Veronal will produce sleep under many circumstances where the hypnotic alone will fail.

Acts mildly and produces a sleep which is very like that of nature. It fails when there is much pain. Of the unpleasant side effects are mentioned the production of rashes and the diuretic action.—*B.M.J.E.* '05, ii. 4.

Appears to combine certainty of action with the advantages of inducing sleep in such small doses (5 to 10 grains) as have hitherto proved efficacious only in the Chlorine compounds.—*B.M.J.* '05, ii. 1005.

Fatal case of Veronal poisoning.—*L.* '05, ii. 234. ½ oz. taken between a Thursday and a Saturday morning. Attention called to the unrestricted sale of so large a quantity as 1 oz. of the drug to a private person.

Ought to be administered always with great caution in small doses, and especial care ought to be taken in cases of renal insufficiency.—*B.M.J.E.* '05, ii. 63; *B.M.J.* '07, i. 259.

Dose.—5 to 20 grains = 0·32 to 1·3 grammes.

Prescribing Notes.—*It can be made into* **pills** *containing 5 grains each, with ½ of its weight of 'Diluted Glucose.' It can also be dispensed in cachets.*

Tablets are supplied containing 7½ grains = 0·5 gramme in each.

Official in Swiss, Acidum Diæthylbarbituricum.

Tests.—Veronal melts at 191° C. (375·8° F.). It sublimes without residue, except possibly a faint trace of Carbon. It dissolves sparingly in Water, forming a neutral solution, but is more readily soluble in Alcohol (90 p.c.). The saturated aqueous solution acidified with Nitric Acid yields on the addition of Millon's reagent (1 part by weight of metallic Mercury dissolved in the cold in 1 part by weight of fuming Nitric Acid, the solution diluted with 2 parts of Distilled Water and filtered) a white colourless precipitate. 0·2 of a gramme of Veronal when fused with Potassium Hydroxide evolves Ammonia, recognisable by its distinctive odour and by its action upon moistened red Litmus paper; if the cooled residue be acidified with Diluted Sulphuric Acid, Carbon Dioxide is evolved and a characteristic fatty odour is developed. 1 gramme when ignited with free access of air should leave no weighable residue.

ELIXIR DIETHYLBARBITURIC ACID. — Diethylbarbituric Acid (Veronal), 18 grammes; Compound Tincture of Vanillin (N.F.), 16 c.c.; Alcohol, 175 c.c.; Glycerin, *q.s.* to make 500 c.c. Dissolve the Diethylbarbituric Acid in the Alcohol, add the Compound Tincture of Vanillin, and enough Glycerin to make 500 c.c.—*C.D.* '08, ii. 521.

Bromural (Urea Monobromine Isovalerianate).—In white platelets having a slightly bitter taste; soluble in hot Water, Ether, Alcohol and the alkalis. The dose is 5 to 10 grains = 0·32 to 0·65 gramme, introduced as a hypnotic.—*B.M.J.E.* '07, i. 75.

Not Official.

URETHANE.

ETHYL CARBAMATE. ETHYL-URETHANE. CARBAMIC ACID ETHYL ESTER.

$C_3H_7NO_2$, eq. 88·43.

Colourless, prismatic, odourless crystals or scales, with a peculiar cool taste.

Urethane is official in the *U.S.P.* under the title of Æthylis Carbamas. It may be prepared by the action of Ethyl Alcohol upon Urea or one of its salts.

It should be kept in well-stoppered glass bottles, preferably of a dark amber tint.

Solubility.—1 in 2 of Water; 1 in 1 of Alcohol (90 p.c.); 2 in 3 of Ether.

Medicinal Properties.—Hypnotic, without anodyne properties.

Possesses a slightly irritant action.—*L.* '99, ii. 72.

Was good as a hypnotic, but it had to be used in very large quantities.—*B.M.J.* '05, ii. 250.

Is uncertain and weak in action.—*B.M.J.* '05, ii. 1005.

Dose.—15 to 30 grains = 1 to 2 grammes.

Official in Span., Swiss and Mex. (Uretano).

Tests.—Urethane melts at about 48° C. (118·4° F.). The *U.S.P.* states 47·5° to 50° C. (117·5° to 122° F.), it boils at about 172° C. (341·6° F.). At a higher temperature it is decomposed. When mixed with 5 times its weight of Sulphuric Acid and gently heated it is decomposed with the evolution of Carbon Dioxide. When warmed with Sodium Hydroxide Solution (15 p.c.) the distinctive odour of Ammonia is evolved, and a piece of red Litmus paper suspended in the mouth of the tube is rendered blue. 0·5 of a gramme dissolved in 5 c.c. of Water, containing in solution 1 gramme of dry Sodium Carbonate yields when the solution is warmed with the addition of Iodine a yellow crystalline precipitate of Iodoform when the solution cools. The 10 p.c. aqueous solution should not afford a turbidity on the addition of Silver Nitrate Solution, indicating the absence of Chlorides. 2 c.c. of a 10 p.c. aqueous solution mixed with 2 c.c. of cold concentrated Sulphuric

Acid, the liquids being kept cool during the mixing, should not yield a brownish ring at the junction of the two liquids on the addition of 1 c.c of Ferrous Sulphate Solution, indicating the absence of Nitrates. Separate solutions of 1 gramme of Urethane dissolved in 1 c.c. of Water should neither afford a crystalline precipitate on the addition of 1 c.c. of Nitric Acid, nor on the addition of Mercuric Nitrate Solution, nor on the addition of Oxalic Acid Solution, indicating the absence of Urea or Carbamide. 1 gramme when heated with free access of air should leave no weighable residue, indicating the absence of mineral impurities.

HEDONAL (Methyl-propyl-carbinol-urethane).—Colourless crystals, or as a white crystalline powder, slightly soluble in cold Water, but more readily in hot Water.

Introduced as a hypnotic. Stated (*B.M.J.E.* '05, i. 34) to have been given as a hypnotic to supplement Chloroform anæsthesia in doses of 30 grains from 1½ to 1 hour before operation, small quantities of Chloroform then sufficing to produce anæsthesia.

Dose.—15 to 30 grains = 1 to 2 grammes, in cachet.

Somnal.—Stated to contain Urethane and Chloral Hydrate; was introduced as a hypnotic, in doses of 30 grains.

Phenyl-Urethane (Euphorin).—A white crystalline powder, only sparingly soluble in Water, soluble in Alcohol (90 p.c.) and in Ether. It should be preserved from the light. A powerful analgesic, but like some other powerful analgesics it tends to interfere with the respiratory processes and to weaken the heart. It has proved of special service in the pain of orchitis. Dose.—1 to 5 grains = 0·06 to 0·32 gramme.—*B.M.J.* '98, ii. 1055.

UVÆ URSI FOLIA.

BEARBERRY LEAVES.

Fr., Busserolæ; Ger., Bärentraubenblätter; Ital., Uva Ursina; Span., Gayuba.

The dried Leaves of *Arctostaphylos Uva-ursi*, Sprengel.

Contains a crystallisable glucoside, **Arbutin**, soluble in Water and Alcohol (90 p.c.), dose, 1 to 15 grains.

Medicinal Properties.—Astringent and diuretic; it is a disinfectant to the urinary mucous membrane, and is valuable in inflammation of the bladder and urethra.

Official Preparation.—Infusum Uvæ Ursi.

Not Official.—Infusum Uvæ Ursi Concentratum.

Official in Austr., Belg., Dan., Dutch, Fr. (Busserole), Ger., Ital., Jap., Mex. (Gayaba del pais), Norw., Port. (Uva Ursina), Russ., Swed., Swiss and U.S.

Descriptive Notes.—The leaves are about ¾ to 1 in. long (19 to 25 mm.) long and ¼ to ⅜ in. (6 to 9 mm.) broad, obovate, rounded at the apex, and tapering below into a short leaf stalk, dark green and shining on the upper surface, with a network of depressed small veins, the under surface paler and reticulated with dark veins; the margin is entire and slightly reflexed. The taste is astringent, and the odour faint and tea-like. The leaves of *Vaccinium Vitis-Idæa*, L., bear some resemblance to Bearberry Leaves, and are stated to have been mixed with them, but can be easily distinguished by having dark dots on the under surface, by being crenately toothed near the apex and more revolute at the margin.

The powdered leaves are characterised by the straight-walled

epidermal cells, the large stomata of the lower epidermis, short palisade cells, and the presence of tracheids and numerous serial prismatic crystals.

Tests.—Bearberry Leaves leave from 2 to 3 p.c. of ash.

Preparation.

INFUSUM UVÆ URSI. INFUSION OF BEARBERRY.

Bearberry Leaves, bruised, 1; boiling Distilled Water, 20; infuse for 15 minutes and strain. (1 in 20)

Dose.—½ to 1 fl. oz. = 14·2 to 28·4 c.c.

In the 1864 Pharmacopœia the Leaves were not ordered to be bruised; *when bruised*, the infusion is stronger, but a large deposit forms in the strained fluid.

Incompatibles.—Iron salts, Lead salts, Silver Nitrate, vegetable alkaloids, Gelatin.

Foreign Pharmacopœias.—Official in Fr. (Tisane), 1 in 100; Ital., 1 in 20 Decoction; U.S. has a **fluid extract.**

Not Official.

INFUSUM UVÆ URSI CONCENTRATUM.—Bearberry Leaves, in No. 20 powder, 40; Alcohol, (90 p.c.), 25; Dilute Chloroform Water (1 in 1000), *q.s.* to make 100. Prepare by the repercolation.—*Farr* and *Wright*, *P.J.* '06, i. 165 and '07, i. 621; *C.D.* '06, i. 252; and *Y.B.P.* 1907, 248.

Dose.—½ to 1 fl. drm. = 1·8 to 3·6 c.c.

This appears in the *B.P.C.*

VALERIANÆ RHIZOMA.

VALERIAN RHIZOME.

B.P.Syn.—VALERIAN ROOT.

FR., VALÉRIANE OFFICINALE; GER., BALDRIAN; ITAL., VALERIANA; SPAN., VALERIANA.

The dried erect Rhizome and Roots of *Valeriana officinalis*, L., collected in the autumn.

That from wild plants growing on dry soil is preferred. It owes its properties to a volatile Oil and a volatile Acid; the salts of the latter (Valerianates) are not prepared from the root, but synthetically from Amylic Alcohol.

The bulk of the Valerian root used in this country is of foreign growth, and should either be allowed or expressly prohibited in *B.P.*

Under the title **Valerianæ Indicæ Rhizoma**, the dried Rhizome and Rootlets of *Valeriana Wallichii*, DC., are official in the *Ind.* and *Col. Add.* for India and the Eastern Colonies.

Medicinal Properties.—It is a nervine stimulant and antispasmodic. Useful in hysteria, in functional nervous diseases associated with hysteria, and as an adjunct to tonics.

The difference in physiological action between the juice and the dried root of Valerian is stated (*L.* '05, i. 1396) to be due to oxidation of the active constituents during drying. The sedative and antispasmodic action of the fresh juice is very constant, and is not accompanied by any permanent stimulating action. Since the fresh juice owes its peculiar physiological properties to the undecomposed bornyl iso-valerianate contained in the volatile Oil, it would appear to be more desirable to use the volatile Oil in preference to the other preparations of Valerian.