places the meal forms the chief support of the poor: and for infants who are unfortunately deprived of their natural and proper nourishment, the breast milk, no better substitute can be adopted than thin grit gruel mixed with good cow's milk. The gruel should not be kept longer than forty-eight hours, as it becomes acescent after that period.[1]

Qualities.— Oats are inodorous; and taste very slightly, but not unpleasantly, bitter. They have not been chemically examined; but the greater part of their substance appears to consist of fecula or starch.

Medical properties and uses.— Gruels, or decoctions of grits or of oatmeal, are excellent demulcents, and therefore very frequently prescribed in inflammatory diseases, diarrhœa, cholera, dysentery, calculus, and febrile affections. They may be sweetened, acidified, or used plain. They are also used locally in glysters; and the meal boiled with water into a thick paste forms an excellent, suppurative poultice.

BALSAMUM PERUVIANUM. Vide *Myroxylon Peruiferum.*

BALSAMUM TOLUTANUM. Vide *Toluifera Balsamum.*

BARYTA. Barytes.

Syn. Baryte (*F.*), Baryterde, Schwerede (*G.*), Barite (*I.*).

This mineral substance does not exist, as far as we know, in an uncombined state; and its native combinations hitherto discovered are very few. It is found

A. Combined with carbonic acid:

Sp. 1. *Carbonate of barytes*, or *Witherite.*[2]

B. ——— with sulphuric acid:

2. *Sulphate of barytes*, or *Heavy spar.*

Barytes is obtained by decomposing these fossils. It is not a simple substance, but a compound of a peculiar metallic base named *barium* by Sir H. Davy[3], and oxygen, in unknown proportions.

1. CARBONATE OF BARYTES.

Officinal. CARBONAS BARYTÆ, *Edin.* Carbonate of Barytes.

Syn. Carbonate de Baryte (*F.*), Kohlonsaure Baryterde (*G.*), Ossicarbonato di Barite (*I.*)

This fossil is found native in Sweden, Scotland, and Cumberland, but, in greatest abundance at Anglesark, in Lanca-

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[1] The following is the simplest mode of making gruel: Put three ounces of grits which have been washed, into four pints of water, and boil slowly until the water be reduced one half; then strain through a sieve to separate the undissolved part of the grits from the gruel.

[2] So named by Werner, after Dr. Withering, who discovered it native on Alston moor in Cumberland, in 1783.

[3] Mr. Murray proposes *barytum* instead of barium. *Sys. of Chem.* ii. 205.

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shire. It usually occurs massive in veins, which traverse the independent coal formation; and sometimes, although rarely, it is found crystallized. The crystals are small, and their primitive form is yet undecided.

Qualities. — Carbonate of barytes is inodorous and insipid, but is nevertheless poisonous. Its colour is white, or yellowish grey: it is translucent, with a shining, somewhat resinous lustre; and breaks in one direction with a fracture intermediate between radiated and foliated, and in another uneven: the fragments wedge-shaped. The lustre of the principal fracture is glimmering; that of the cross glimmering and resinous. Its specific gravity is 4.331. When heated it becomes opaque; and is fused into a white enamel by the blow-pipe; and, when pulverized, its powder phosphoresces when thrown on burning coals. It is nearly insoluble, requiring for its solution 4304 times its weight of cold water; and 2304 of boiling water. It dissolves with effervescence in diluted nitric acid, although the strong acid exerts no action on it. It consists of 9.75 of barytes and 2.75 of carbonic acid in 100 parts.

Use. — It is only used for preparing the muriate. It may, however, be exhibited as a poison; and in this case the antidote is diluted sulphuric acid, as the sulphate which is thus formed is an inert salt.

Officinal preparation. *Murias Barytæ*, E.

2. SULPHATE OF BARYTES.

Officinal. SULPHAS BARYTÆ, *Edin.* Sulphate of Barytes.

Syn. Sulfate de Baryte (*F.*), Schwefelsaures Baryterde (*G.*), Tungspat (*Swed.*), Ossisolfato di Barite (*I.*).

This combination of barytes, which was formerly named *Ponderous spar*, is found native at Freyberg in Germany, and in many parts of the world. It is found almost always in veins; but sometimes it occurs in beds. It is occasionally obtained in powder, frequently in amorphous masses, and often in crystals.

Qualities. — Sulphate of barytes is inodorous and insipid. Its colour is white, with shades of yellow, red, blue, or brown. It occurs transparent, semitransparent, or only translucent; and is hard, brittle, and heavy, its specific gravity being from 4.484 to 4.500. The varieties of form of its crystals are numerous; but the primitive form is a rectangular prism, the basis of which are rhombs with angles of 101° 30′ and 78° 30′.[1] The most common varieties of its crystals are the octahedron with oblique summits, the six or four-sided prism, the hexangular table with bevelled edges, sometimes

[1] Haüy, *Thomson's Chemistry*, iv. 369.

they are needle form.[1] It breaks with a straight foliated fracture; the fragments are nearly rhomboidal, and having a shining, pearly, almost vitreous lustre. It is fused by the blow-pipe, and converted into the sulphuret; and is soluble in sulphuric acid only, from which it is precipitated by water. The results of experiments to ascertain its constituents have been very discordant: according to Berzelius, they are 9.573 of barytes, and 5 of acid.

Use.—This barytic salt is introduced into the list of materia medica, merely as a substitute for preparing the muriate of barytes, when the carbonate cannot be procured.

BELLADONNÆ FOLIA. Vide *Atropa Belladonna.*

BENZOINUM. Vide *Styrax Benzoin.*

BISTORTÆ RADIX. Vide *Polygonum Bistorta.*

BISMUTHUM. Bismuth.

Syn. Etain gris, bismuth (*F.*), Wismuth (*G.*).

This metal is not very widely diffused. Its ores are found chiefly in Saxony; and, less abundantly, in Sweden, France, and Cornwall. It is usually accompanied by cobalt. It most commonly occurs in the state of metal, and, therefore, its ores are not much diversified. The following are the states in which Bismuth is found: —

A. In its metallic state:

i. Alloys. — *Sp.* 1. *Native Bismuth.*

B. United with other metals and sulphur:

ii. Sulphurets. — 2. *Common Sulphuret.* 3. *Needle Ore.* 4. *Cupreous Sulphuret.*

C. United with oxygen:

iii. Oxyde. — 5. *Bismuth ochre.*

The ancient German miners regarded it as incomplete silver, or silver beginning to form, and termed it *tectum* argenti: and so late as the close of the 17th century it was considered a species of lead.

Bismuth was for some time considered as an alloy by chemists; but this opinion was gradually discovered to be erroneous; and it now ranks as a distinct metal.[2]

BISMUTHUM. *Lond.* Bismuth.

This metal appears as if formed of broad shining plates adhering to one another, of a reddish white colour; and is both insipid and inodorous. Its specific gravity is 9.822. It is not very brittle; and is rather softer than copper, but is not very malleable, and breaks when struck smartly by a ham-

[1] *Thomson's Chemistry*, 5th edit. iii. p. 413.

[2] The Greeks and Arabians were not aware of the existence of Bismuth; but it was very early distinguished by the Germans. It is mentioned as a peculiar metal by Agricola, in his treatise intitled *Bermannus*, written in 1529.

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mer: it soon loses its lustre when exposed to the air, but remains unaltered under water. It cannot be drawn out into wire. It melts at 476° of Fahr., in which state its surface is oxydized in pellicles like lead; it evaporates in a higher temperature, and may be distilled over in close vessels. It is inflammable in a strong red heat, burning with a faint blue flame and emitting a yellow smoke, which condenses into an oxyde, insipid, unvolatilizable, insoluble in water. The oxyde when strongly heated melts and becomes darker coloured; and it may be sublimed at a heat below that which is required to fuse it. It is easily reduced when heated in conjunction with combustible bodies; the affinity between bismuth and oxygen being weak. According to Lagerhjelm this oxyde consists of 100 parts of Bismuth and 11.275 of oxygen: or, according to Mr. Phillips, of Bismuth 90 and oxygen 10 in 100 parts.[1]

Bismuth inflames in chlorine gas, and forms a chloride. It also combines readily with Iodine when heated, and forms an iodide of an orange-yellow colour, and soluble in pure potass. Bismuth does not combine with azote, hydrogen, carbon, boron, silicon, nor phosphorus. Bismuth in fusion readily combines with sulphur, and forms a sulphuret of a bluish grey colour, which is not unlike sulphuret of antimony. It crystallizes in tetrahedral crystals, which cross one another: and is very brittle and fusible. It is readily alloyed with other metals, forming with several of them compound metals of great fusibility.[2] It constituents, according to Dr. John Davy, are 100 of Bismuth and 22.34 of sulphur, which nearly agrees with the analysis of Lagerhjelm, who makes them to be 100 of Bismuth and 22.52 of sulphur.[3]

Bismuth, in its metallic state, has no action on the animal economy. It is used merely for preparing the *subnitrate*; a salt which has long been employed, with great advantage, in cardialgia and similar affections of the stomach, but was not admitted into the Pharmacopœia, until the present edition of that work appeared.

Officinal preparation. — *Bismuthi subnitras*, L.

BITUMEN.

Syn. Bitume (*F.*), Erdharze (*G.*), Bitume (*I.*), Bitumen (*S.*).

In the limited signification of this term, it is meant to imply those mineral inflammable bodies, which resemble, in a certain degree, oily and resinous substances. They have been divided

[1] *Translation of the London Pharmacopœia*, 1824. p. 91.

[2] An alloy composed of 8 parts of Bismuth, 5 of lead, and 3 of tin, will melt in water below the temperature of 212°; and is rather useful for taking casts and similar purposes.

[3] *Thomson's Chemistry*, 5th edit. vol. i. p. 459.

into two classes: the first containing bitumens, or, properly speaking, *bituminous oils*, which possess nearly the same properties as the essential oils; the second, *Bitumens*, strictly so called, which possess properties peculiar to themselves[1]; and a third class may be formed of those substances in which bitumen predominates with other components.

A. Bituminous oils:

fluid. *Sp.* 1. Petroleum. Var. *a. Naphtha.* *b. Petroleum.*

solid. 2. Maltha, or Sea wax. 3. Mineral tallow.

B. Proper bitumens:

solid. 1. Asphaltum.
semifluid. 2. Mineral tar, or tallow.
solid. 3. Mineral Caoutchouc.

C. Bituminous compounds:

1. *with resinous matter.* *Sp.* 1. Resin-asphaltum.
2. *with charcoal.* 2. Pit-coal. Var. *a. Brown coal.* *b. Black coal.* *c. Glance coal.*

According to Hatchett the elements of bitumens are carbon, hydrogen, sometimes azote, and probably oxygen.[2]

Officinal. PETROLEUM, *Lond.* BITUMEN PETROLEUM, *Edin.* PETROLEUM BARBADENSE, *Dub.* Petroleum. Barbadoes Tar.

Syn. Petrole (*F.*), Steinöhl (*G.*), Bergolja (*Swed.*) Petrolio (*I.*), Neft (*Arab.*), Mitti tel (*H.*), Munty lum (*Tam.*), Minnia tanna (*Malay*), Ippoo (*Sumatran*), Kesosonoabra (*Japanese*).

The officinal names imposed by the three British colleges are not to be regarded as synonymous of the same species of bitumen. The first species of the bituminous oil is properly named by the London college, the second variety of that species being the real Petroleum of the shops; but the Dublin college has incorrectly given the second species of the proper bitumens as the synonyme of Bitumen Petroleum.

Petroleum is found in many parts of the world, in various states of purity. When free from foreign ingredients, and before it has been long exposed to the action of the air, it is named *naphtha*; of which the purest kind that is brought to Europe comes from Monte Ciaro, near Piacenza in Italy. "This hill consists of horizontal beds of argillite, in which pits are sunk till the water comes in; after which the naphtha oozes out of the sides and floats on the surface of the water, whence it is skimmed off every week."[3] It usually flows from rocks of the coal formation. There is also a fountain of very pure Naphtha at the base of the mountains of Buck-

[1] *Thomson's Chemistry*, 5th edit. vol. ii. p. 384.
[2] *Linn. Trans.* iv. 129.
[3] *Mem. Sci.* 1736, p. 57, quoted by Aikin, *Dict. of Chem.* art. *Bitumen.*

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tiavi, betwixt the city of Bruster and the valley of Ramhovmouz. The less pure petroleum of the shops is procured from Monte Festino, near Modena. In the Birman empire there are 520 wells in one district, which yield annually more than 400,000 hogsheads of petroleum.

Qualities. — Naphtha is of a pale yellowish colour, thin, fluid, light, transparent, odoriferous, unctuous to the touch, volatile, and very inflammable. By long exposure to the air, it passes into the second variety *petroleum*; which is thicker than naphtha, unctuous to the feel, semi-transparent, of a reddish or blackish brown colour, and when long exposed to the air changes into true *bitumen*. It has a strong, penetrating, not disagreeable odour, and a bitter, pungent, acrid taste; and is not quite so inflammable as naphtha. Its sp. gr. varies from 0·730 to 0·878.[1] It is insoluble in water; but is soluble in alcohol, ether, the volatile and the fixed oils. When distilled with water, it comes over nearly as clear and fluid as naphtha. Both these varieties of bituminous oil combine with fat, resins, essential oil, and camphor; with alkalies they form soapy compounds; and sulphuric and nitric acids, change them into solid resins.

Medical properties and uses. — Petroleum is a stimulating antispasmodic and sudorific; and as such has been given in asthma and coughs unattended with imflammation; and in Germany has been extolled as a specific for tape worm; but it is chiefly used externally as a stimulant in diseases of the hip-joint, in rheumatic and other chronic pains, in chilblains, porrigo, and to paralytic limbs, applied by friction.[2] It is, however, scarcely ever employed; and on this account is not often to be procured in the shops. The dose of petroleum may be from ℥x. to ʒss., given in any convenient vehicle.

BOLETUS. *Spec. Plant. Willd.*

Cl. 24. *Ord.* 13. Cryptogamia Fungi, *Nat. ord.* Fungi, *Linn. Juss.* *G.* — *Fungus* horizontal, porous beneath.

* *Parasitic, stemless.*

Spec. 3. B. *Ignarius.* Agaric of the oak. *Sowerb. Fung. t.* 34. *Officinal.* BOLETUS IGNARIUS. AGARICUS, *Edin.* Agaric.

Syn. Agaric de chêne (*F.*), Feuerschwamm (*G.*), Tontcligezwam (*Dutch*), Tyndersvamp (*Dan.*), Früske (*Swed.*), Gubka (*Polish*), Esca o fungo preparata (*I.*), Agarico (*S.*), Boleto da isca (*Portug.*), Garikoon (*Arab.* and *Tam.*).

This species of fungus is found in Britain, growing upon decayed trunks of the ash and the oak. The pileus, or hat, is scaly and convex, but depressed in the centre. When young

[1] *Kirwan.*

[2] In the West Indies the Barbadoes tar is used as an internal remedy. Of the Burma Petroleum, Dr. Fleming remarks, "in chronic rheumatism I found much greater benefit from it than from the more costly Cajeput oil."—*Asiatic Researches.*

it is of a light brown colour above, and soft like velvet; white underneath, and covered with a slimy matter; but when mature it changes to dark brown, approaching to black. It is from six to ten inches in diameter; and although generally stemless, yet it is sometimes supported on a footstalk an inch in length.[1]

The boletus which grows upon the oak is said to be the most valuable. It should be gathered in August or September, and be kept in a dry room. "The way of preparing it is to take off with a knife the white and hard part, till you find a substance so soft as to yield under the finger like shammy leather."[2] This must be divided into different pieces, and these beaten with a hammer till they become so soft as to be torn with the finger.

Qualities.—Prepared agaric is inodorous, and has a slightly astringent taste. According to Bouillon la Grange, by whom it has been chemically examined, it contains resin, extractive, something similar to animal gelatin, and different salts.

Medical properties and uses. — Agaric has been much celebrated as a styptic, when externally applied to bleeding arteries and veins. It was introduced by Brossard, a French surgeon, in 1750, and was for some years used both on the continent and in this country: but if it really possess styptic powers greater than those of lint or sponge, which does not appear to be the case, the improved practice of surgery renders all such applications less necessary than they were when the use of agaric was introduced.

BONPLANDIA. *Plantæ Equinoctiales.* Tom. ii. p. 5.
Cl. 5. Ord. 1. Pentandria Monogynia. *Nat. ord.* Quassiæ, *Juss.*
Gen. Char. Calyx Monophyllous, campanulate, five-toothed. *Corolla* five petals cohering near the base, funnel-shaped.
Spect. 1. B. *trifoliata.* Three-leaved Bonplandia. *Humboldt*, l. c. tab. 97. *Mem. de l' Institut.* 184. Part I. p. 82. pl. 10.
Officinal. CUSPARIÆ CORTEX, *Lond.* BONPLANDIÆ TRIFOLIATÆ CORTEX, *Edin.* ANGUSTURA; CORTEX, *Dub.* Cusparia bark, Bonplandia bark, or Angustura bark.
Syn. Angusture (*F.*), Angusturarinde (*G.*), Angustura (*I.*).

Although the London College has designated the tree which yields this bark, by the name of Cusparia *febrifuga*, as originally given to it by Humboldt, yet we have preferred the name imposed by Willdenow, and since adopted by Humboldt.

The Bonplandia *trifoliata* is a native of South America, growing abundantly in the woods, five or six leagues from the eastern bank of the Carony, at the foot of the hills that surround the missions of Capassui, Upata, and Alta Græcia.

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[1] Withering, *Bot. Arrange.* ii. 767. [2] *Phil. Trans.* xlix. Part. I. 29.

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It grows also west of Cumana, in the gulf of Santa Fe; and, as Humboldt remarks, may become an article of export from New Andalusia. It is an elegant evergreen, rising to the height of from sixty to eighty feet, having a cylindrical *trunk*, covered with a grey-coloured bark, and branching towards the summit. The branches are alternate, the upper ones spreading nearly horizontally. The *leaves*, which are ranged alternately on the branches, are about two feet long, independent of the petiole, and composed of three oblong ovate leaflets, pointed at each extremity, and attached at their bases to a single channelled petiole, from ten to twelve inches in length. The *leaflets* are glandular, and, when fresh, exhale an agreeable aromatic odour. The *inflorescence* is a terminal raceme, composed of alternate peduncles, bearing from three to six flowers each: the calyx is inferior, persistent, five-toothed, and tomentose; the corolla is funnel-shaped, and composed of five petals, so united below as to appear as one tube, with a five-cleft spreading tube. The *nectary* consists of fine glandular bodies. The *stamens*, which are shorter than the petals, have white filaments supporting oblong yellow anthers; the *pistil* is formed of five, oval, hairy ovaries, from the centre of which a single style rises, supporting five, fleshy, green stigmata. The *fruit* consists of five, oval, bivalve capsules, each enclosing a single seed. The first parcels of Cusparia bark were imported from Dominica in 1778, and the tree yielding it was supposed to be a native of Africa[1]; but importations from Cadiz and the Havannah, and the travels of Humboldt and Bonpland, have led to the knowledge of the real place of its growth. It is brought to this country packed in casks; but the original package, Mr. Brande informs us, is curiously formed of the large leaves of a species of palm, surrounded by a kind of network made of sticks. It is in pieces of different lengths, some nearly flat, and others in partial quills of all sizes intermixed.

Qualities.—The odour of this bark is not strong, but peculiar; the taste bitter, slightly aromatic, and permanent, leaving a sense of heat and pungency in the throat. The pieces are covered with a whitish wrinkled thin epidermis; the inner surface is smooth, of a brownish yellow colour, and the intermediate substance mottled fawn colour, and of a compact texture. It breaks with a close, short, resinous fracture; is easily pulverized, and affords a powder which, when triturated with lime or calcined magnesia, gives a smell of ammonia.—The ac-

[1] See *Brande's Experiments and Observations on the Angustura Bark*, a name which it received only because it came fom *Nueva Guayana*, or *Angustura*.

tive matter is taken up by cold and hot water in infusion, and is not injured even by coction, but the addition of alcohol precipitates part of the extractive. The alcoholic tincture reddens litmus paper, and becomes milky on the addition of water. The watery infusion precipitates the infusion of galls, and of yellow cinchona, but not gelatine.[1] I found that it precipitates sulphate of iron, tartarized antimony, sulphate of copper, acetate and superacetate of lead, oxymuriate of mercury, and pure potass yellow; which confirm Vauquelin's analysis. Nitrate of silver also precipitates it yellow, but assumes a violet colour after some time. Ammonia deepens the colour, but is not precipitated. Sulphuric acid gives the infusion a brown colour, and gradually a lemon-yellow precipitate is deposited; whilst nitric acid deepens the colour to a blood red, and after some time affords a lemon-yellow precipitate. The muriatic acid does not affect it. Sulphuric ether takes up one part from ten of the powder, and when evaporated on water, leaves a greenish yellow, very acrid resin, and renders the water milky: the addition of nitro-muriatic acid changes this milky appearance to red, slowly producing a lemon-yellow coloured precipitate, and giving the resin on the side of the glass a brownish pink colour. By distillation with water, the bark yields a small portion of a white essential oil. These experiments ascertain the substances which are incompatible in prescriptions with infusion, or tincture of cusparia bark; and show that it contains *resin*, a peculiar variety of *extractive*, *carbonate of ammonia*, *and essential oil*.[2]

Medical properties and uses.—Cusparia bark is stimulant and tonic. It was introduced in the West Indies with very high pretensions; and, although it is not superior or even equal to Cinchona bark in intermittent fevers, yet it is a remedy possessed of very considerable powers. It does not oppress the stomach, but gives to it a degree of warmth, expels flatus, keeps the bowels open, and increases the appetite for food. It is particularly efficacious in bilious diarrhœa and dysentery, after due evacuations; and also proves useful in dyspepsia,

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[1] Vauquelin. *Annals de Chimie*, lix. 130.

[2] A species of bark, in some respects resembling the Cuspasia, has lately been introduced upon the Continent, possessing the most deleterious quality. Planche has examined it, and named it Angustura ferruginea. It is readily distinguished from the true bark, by its greater thickness and weight, and the epidermis being of a brownish, olive hue, and warty. It impresses also the most nauseous and permanent bitter when chewed. By agitating the powder in very dilate muriatic acid, it assumes a beautiful green, owing to the iron contained in the cuticle of this bark. The narcotic, deleterious matter has been as certained to bean alkali, which has been named *Brucine*. For particulars regarding its poisonous properties, vide *Orfila's Traité des Poisons*, tom. ii. p. 331., and *The Lond. Med. Repository*; and for the characters of Brucine, vide *Ann. de Chim. et Phys.* xii. 113.

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hysteria, leucorrhœa, and most of the diseases in which the use of a general tonic is indicated. Mr. Brande published several cases which came under his own observation, and some from the communications of others, in which its usefulness, as a remedy for intermittents, appears to be confirmed: but this is disputed, particularly by Alibert, who gave it a fair trial in the hospital of St. Louis. My own experience does not enable me to give an opinion on the subject. Its employment is contra-indicated in directly inflammatory complaints, in hectic fever, and colliquative diarrhœa.

It may be exhibited in substance, in watery infusion, in tincture, and in the form of watery extract. The powdered bark is given in doses of from grs. v. to grs. xx., beyond which it is apt to induce nausea. It may be combined with rhubarb, neutral salts, magnesia, and testaceous medicines, or with powdered cinnamon, which covers its nauseous taste better than any other adjunct. Of the aqueous extract, grs. x. is a full dose. In large doses all the forms are apt to excite nausea.

Officinal preparations. *Infusum Cuspariæ*, L. *Tinctura Bonplandiæ trifoliatæ*, E. *Tinctura Angusturæ*, D.

BOSWELLIA. *Roxburgh.*

Cl. 10. *Ord.* 1. Decandria Monogynia. *Linn.*

Gen. Char. Cal. beneath, five toothed. *Cor.* five petals. *Nect.* a crenulated fleshy cup, surrounding the lower part of the germ, with stamens inserted on its outside. *Capsule* three-sided, three valved, three-celled. *Seeds* solitary, membranous, winged.

Species. — B. *Serrata. Asiatic Researches*, 8vo. vol. ix. p. 377.

Officinal. OLIBANUM[1], *Lond.* JUNIPERI LYCIÆ GUMMI-RESINA, *Edin.* OLIBANUM; GUMMI-RESINA, *Dub.* Olibanum.

Syn. Encens (*F.*), Weirauch (*G.*), Olibano (*I.*), Paringhi Sambrani (*Tam.*), Looban (*Malay,*) Koondir Zuckir (*Hind.*), Cundur (*Arab.*), Labúniyá (*Syr.*).

Olibanum was supposed, on the authority of Linnæus, to be the production of the Juniperus *Lycia*[2]: but this opinion appears to be erroneous; for, as Mr. Colebrooke has observed, "this species of juniper is a native of the south of France;" and the French botanists deny that it yields the resinous gum in question.[3] On this account, therefore, and influenced by other proofs brought forward by Mr. Colebrooke, we have been induced to regard olibanum, at least that brought from India, as the production of the Boswellia *serrata* of Roxburgh, although it is still referred to the juniperus *Lysia* in the British pharmacopœias.[4] Lamark supposes that the Arabian oliba-

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1 Quasi Oleum Libani. Colebrooke, *Asiatic Researches*, 8vo. vol. ix. p. 382.

2 Λιβανος, Dioscoridis. 3 *Asiatic Researches*, vol. ix. p. 377.

4 Although so much used in the early ages as incense in sacrifices, and, latterly, in the ceremonies of the Greek and Roman churches, yet, both ancient and modern writers have differed regarding the plant yielding it.

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num is the production of the Amyris *Gileadensis;* but his reasons are not very conclusive.

The Boswellia serrata is a native of the mountains of India, and is vulgarly known under the name of Sálaï. It is a large tree, with the foliage crowded at the extremities of the branches. The leaves are impari-pinnate, consisting of ten pairs of leaflets, sessile, each an inch, or an inch and a half in length, obliquely ovate, oblong, obtuse, serrate, and villous, supported by round downy petioles. The flowers, which are produced in axillary racemes, shorter than the leaves, are numerous, small, and of a pale pink colour, accompanied with minute bracteas. The calyx is monophyllous, five-toothed, and downy: the corolla composed of five oblong, spreading, exteriorly downy petals; and the nectary a fleshy, crenulate, coloured cup, adhering to the calyx. The stamens are ten, alternately shorter, supporting oblong anthers: the pistillum consisting of an ovate germen, a cylindrical style, and trilobate stigma. The capsule is smooth, three-sided, trilocular, three-celled, and three-valved: each cell containing one perfect seed only, which is broad, cordate, and winged.

Olibanum is imported in chests and casks from the Levant, and is also sold at the East India Company's sales; but the Indian olibanum is not much esteemed.

Qualities.—Olibanum is a translucent, whitish-yellow, brittle substance, generally covered with whitish powder, produced by the friction of the pieces against each other. Its odour, when burnt, is fragrant; its taste is acrid, bitterish, and somewhat aromatic. When heated, although it melts with difficulty, yet it burns brilliantly, and leaves a whitish ash, composed of phosphate, carbonate, and sulphate of lime, with muriate and carbonate of potass. When distilled alone it affords a volatile oil; but, when in conjunction with water or alcohol, no oil comes over. Alcohol dissolves three-fourths of it, forming a transparent solution; and when triturated with water a milky solution is produced, from which the resinous matter is deposited after some time, and three-eighths only remain dissolved. Ether takes up rather more than one half, and when evaporated on water leaves a very pure transparent resin; while the part undissolved by it becomes white and opaque, and is almost entirely soluble in water, forming a milky solution. Hence, olibanum appears to consist of resin, gum, and a volatile oil. This opinion has been lately confirmed by Braconnot, who has analysed olibanum, and found in 100 parts of it, 8 of fragrant volatile oil, 56 of resin, 30 of gum, and 5·2 of a matter resembling gum, but insoluble in water and alcohol. The oil resembled the oil of lemons in odour and colour.

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Medical properties and uses. — Olibanum is stimulant and diaphoretic. It was formerly much used in gleets and affections of the chest; and, externally, as a vulnerary; but it is now employed only as a perfume in sick rooms.

BUBON.[1] *Spec. Plant. Willd.* i. 1439.

Cl. 5. Ord. 2. Pentandria Digynia. *Nat. Ord.* Umbellatæ.

G. 546. *Fruit* ovate, striated, villose.

Species 2. B. *Galbanum.*[2] Lovage-leaved Bubon. *Med. Bot. 2d. edit.* 98. *t.* 40.

Officinal. GALBANI GUMMI RESINA, *Lond. Dub.* BUBONIS GALBANI GUMMI RESINA, *Edin.* Galbanum Gum-resin.

Syn. Galbanum (*F.* and *Dutch*), Mutterharz (*G.*), Galbano (*I.*), Galbáne (*S.*), Bārzud (*A.*), Bireejā (*H.*), Beezud (*Pers.*).

This species of Bubon is a perennial plant, a native of Africa about the Cape of Good Hope, and of Syria, flowering in June and July. It rises eight or ten feet in height, with the stem ligneous at the base, and there furnished with a purplish bark; but the upper part is jointed, branching, leafy, and covered with a glaucous exudation, which can be easily wiped off. The lower leaves are nearly tripinnate, on vaginant footstalks; the uppermost are almost simple, tri-lobed, thickish, irregularly serrated, and of a greyish colour. The flowers are in terminal umbels, the principal umbel being large, and plano-convex. The involucres are composed of twelve narrow, lancet-shaped, membranous, whitish leaflets, bent downwards; but the involucels of only six leaflets. The flowers are all fertile; the petals yellow, with inflected tips: the stamens are longer than the petals, supporting yellow anthers; and the styles two, short and tapering. Each flower is succeeded by two oblong-channelled seeds, having a thin membranous border.

When the stem of the growing plant is broken, or wounded by a knife, a cream-coloured juice flows out; and in this manner the gum-resin is procured, by making an incision, or cutting the stem across a few inches above the root; when it soon concretes, and is fit to be gathered. A small quantity exudes spontaneously from the joints of the stem. The gum-resin is brought to this country from the Levant, in cases or chests, containing from one to three hundred weight each. The best is in ductile masses, composed of distinct whitish tears agglutinated together by a pale brown or yellowish substance. It is generally much mixed with stalks, seeds, and other impurities. The separate tears are considered to be the best part of the mass. When the colour is dark brown or blackish, it must be rejected as bad.

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[1] Βουβώνιον, Dioscoridis.

[2] Χαλβάνη, Hippocratis.

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Qualities. — Galbanum has a strong peculiar odour, slightly resembling that of turpentine; and a bitterish, warm, acrid taste. Its specific gravity is 1.212.[1] When triturated with water, about one-fourth of its weight is dissolved, forming a milky solution; but after standing for a little time, four parts are again deposited, and what remains undissolved by the trituration is, exclusive of the impurities, almost completely soluble in alcohol. Wine and vinegar act on it nearly in the same manner as water. Alcohol takes up one-fifth of its weight; and a yellow tincture is produced, which has the sensible qualities of the galbanum, and becomes milky on the addition of water; but there is no precipitate. Proof spirit acts slowly on it, and dissolves the whole, the impurities excepted. Sulphuric æther dissolves a considerable portion of galbanum, forming a bright golden-coloured tincture, which, when evaporated alone, or floating on the surface of water, leaves a yellow, tenacious resin, that retains in perfection the sensible qualities of the galbanum. The part insoluble in æther is nearly wholly soluble in water. Oxymuriatic acid added to the solutions of galbanum, throws down an insoluble matter which appears to be oxidized extractive. By distillation the gum-resin "yields half its weight of volatile oil, which has at first a blue colour."[2] From our experiments, galbanum appears to consist of resin, volatile oil, gum, and extractive.

Medical properties and uses. — Galbanum is antispasmodic, expectorant, and deobstruent; and may be placed between ammonia and assafœtida. It has been found useful in hysteria, particularly when attendant on difficult menstruation; and in chlorosis. Externally it is applied as a resolvent and a stimulating suppurative to indolent tumors.

The dose is from grs. x. to ʒj. in pills; or triturated with water and gum arabic so as to form an emulsion.

Officinal preparations. *Pilulæ Galbani comp.* L. *Pilulæ Assafœtidæ comp.* E. *Pilulæ Myrrhæ comp.* D. *Tinctura Galbani,* D. *Emplastrum Galbani,* D. *Emplast. Galbani compositum,* L. *Emplastrum Assafœtidæ,* E. *Emplastrum Gummosum,* E.

CAJUPUTI OLEUM. Vide *Melaleuca Cajuputi.*

CALAMI RADIX. Vide *Acorus Calamus.*

CALAMINA. Calamine. See *Zincum.*

CALUMBÆ RADIX. Vide *Menispermum.*

CALX. *Edin.* Lime.

Syn. Chaux (*F.*), Kalk (*G.*), Calce (*I.*), Calviva (*S.*), Chunāmboo (*Tam.*), Capoor (*Malay*), Noorch (*Pers.*), Chunna (*H.*), Ahúck (*A.*), Kakote-tung-ŏ-ă (*Esquimaux*).

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[1] Brisson. [2] *Thomson's Chemistry,* 4th edit. v. 142.