CHAP. XVII.

OLEA VOLATILIA, OLIM OLEA STILLATITIA VEL ESSENTIALIA.—VOLATILE OILS, FORMERLY DISTILLED OR ESSENTIAL OILS.

Essential oil, as a proximate principle of vegetables, has already been considered, and its distinctive properties pointed out. As yielded by different vegetables, its chemical characters are nearly uniform; but the oils of different plants vary in their sensible qualities, particularly in those of colour, consistence, odour, and taste. Their odour is that of the plant from which they are procured; their taste also is frequently the same, particularly in those plants named aromatic, and it is always pungent and acrid; their colours are shades of yellow, green and brown; they are usually liquid, but sometimes of a thick consistence.

In a few cases, these oils, existing in distinct vesicles, can be obtained by expression. Usually they are diffused through the vegetable matter, so as to render this impracticable; they are then obtained by distillation; the plant being distilled with a portion of water, not larger than what is necessary to avoid empyreuma. The oil is volatilized with the watery vapour; and though a portion

remains dissolved, yet from the sparing quantity of water employed, the greater part is collected apart, either, according to its specific gravity, floating on the surface, or having subsided to the bottom. In performing the operation in the large way, the same water is repeatedly put into the still, by which the loss from the oil being dissolved is in a great measure avoided. The product of oil is very different from different plants; and it is to be remarked, that the most odorous and pungent plants do not afford the largest quantity, even where the oil is the principle in which the odour or pungency resides;—the petals of the rose for example, or the bark of cinnamon, affording a quantity extremely small, though in the one of these the oil has the entire flavour of the flower, and the other the aromatic warmth of the bark. The quantity and quality of the oil are also influenced by the circumstances of climate, soil and season; the rich aromatic oils being generally more fragrant from the plant when growing in a warm climate and dry soil, than under the reverse of these; and the oil afforded by the aromatic vegetables of this climate is in general stronger, and in larger quantity, in a dry than in a wet season. The oil at its first distillation has frequently an odour less grateful than after it has been kept for some time: by age, however, its flavour is improved. If the air has not been carefully excluded it at length becomes thick; some deposite a little camphor, and others, when distilled anew, yield an oil similar to the original, a resinous substance being left.

The essential oils of commerce are sometimes adultera-

ted, either by the addition of a cheaper oil, as that of turpentine, of an expressed oil, or of alkohol. These frauds are easily detected,—the first, by the smell, when the adulterated oil is dropt on paper, and heated so far as to be volatilized; the second, by the oil forming a greasy spot when dropt on paper, which remains so even after heat has been applied; the third, by the oil, when dropt on water, forming a milky, instead of a transparent film on the surface of the water.

Essential oils are seldom applied to answer any important indication, having scarcely any other powers than those of aromatic warmth and pungency. If used alone to relieve flatulence or nausea, they may be diffused in water by the medium of mucilage and sugar, or dissolved in alkohol, and the solution diluted with water. More generally they are employed as corrigents, to improve the taste and flavour of ungrateful medicines, to cause these to sit easier on the stomach, or to obviate nausea, or any unpleasant symptom they may be liable to produce.

The following general rules with regard to the preparation of these oils are given in the Edinburgh Pharmacopœia. "These oils are to be prepared in the same manner as the Distilled Waters, except that a smaller quantity of water is to be added. Seeds and roots are to be previously bruised or rasped. The oil is brought over with the water, and, according as it is lighter or heavier, floats on the surface, or falls to the bottom, and is afterwards separated.

"It is also to be observed with regard to the prepara-

tion of distilled waters and oils, that, according to the quality of the substances, their texture, the season of the year, and similar circumstances, so many differences must arise, that it is scarcely possible to give any certain and general rules which shall apply strictly to every example. Many things therefore are omitted, to be regulated according to the judgment of the operator, the most general precepts only being delivered."

To the general rules given by the London and Dublin Colleges, which are similar, it is added, that the water which is produced in the distillation of the oils of carraway, peppermint, spearmint, pennyroyal, pimento, and sweet fennel, may be preserved for use, as it is sufficiently impregnated with the essential oil.

The following oils are those inserted in the Edinburgh Pharmacopœia, and, with the exception of the oils of savin and sassafras, they have a place likewise in the London and Dublin Pharmacopœias.

Oleum baccarum juniperi communis. Oil of Juniper.—When genuine, this oil has the flavour of the juniper berries, and is soluble in alkohol. There is generally substituted for it in the shops an oil distilled from some species of turpentine much less grateful, which alkohol does not dissolve.

Oleum juniperi sabinæ. Oil of Savin.—This plant yields more essential oil than any other does, two pounds affording not less than five ounces. The virtues of the savine seem also to depend on it, as the essential oil is

said to be a powerful emmenagogue, in a dose from three to ten drops. It is however very little used.

OLEUM SPICARUM FLORENTIUM LAVANDULÆ SPICÆ. Oil of Lavender.—This oil is used principally on account of its flavour.

OLEUM RADICIS LAURI SASSAFRAS. Oil of Sassafras.—This is the heaviest of the essential oils; its odour is somewhat fragrant, and its taste warm, but it has no quality that renders it of much value.

OLEUM HERBÆ MENTHÆ PIPERITÆ FLORENTIS. Oil of Peppermint.—This is one of the most pungent of the essential oils, and at the same time excites a peculiar sensation of coolness. It is a common and convenient remedy to relieve flatulence and anorexia, under the form of what is named Essence of Peppermint,—a solution of one part of the oil in seven parts of alkohol; the dose of this being fifteen or twenty drops in a cupful of water.

OLEUM FRUCTUS MYRTI PIMENTÆ. Oil of Pimento.—This oil, having the flavour of the Jamaica pepper, is sometimes used on account of this flavour.

OLEUM SEMINUM PIMPINELLÆ ANISI. Oil of Anise.—This oil is of a light colour, and has rather an unpleasant smell. It congeals even at a very moderately cold temperature. It has less pungency than any of the other essential oils, and is therefore well adapted to the purpose to which it is usually applied, that of relieving flatulence and the symptoms arising from it in children, a little of it being rubbed with sugar, and mixed with the

child's food. The common proportion is ten or fifteen drops of the oil to two ounces of sugar.

Oleum summitatum florentium rorismarini officinalis. Oil of Rosemary.—The odour of this oil is less grateful than when it is diluted with alkohol in the form of spirit of rosemary. It is sometimes used in ointments as a perfume, and it enters as a stimulant into the composition of the soap liniment.

Besides these, a few other Volatile Oils have a place in the London and Dublin Pharmacopœias.

Oleum anthemidis. Oil of Chamomile. Ph. Lond.—This oil has an unpleasant flavour, and is applied to no use.

Oleum carui. Oil of Carraway. *Ph. Lond. Dub.*—This is one of the most grateful of the essential oils, and well adapted to act as a carminative, or to communicate an agreeable pungency, and cover the flavour of unpleasant remedies.

Oleum menthæ viridis. Oil of Spearmint. *Ph. Lond. Dub.*—The flavour of this oil is similar to that of peppermint, rather less grateful, and its taste is less pungent.

Oleum origani. Oil of Origanum. *Ph. Lond. Dub.*—This is occasionally used as a perfume, though less grateful than the oil of lavender.

Oleum pulegii. Oil of Pennyroyal. Ph. Lond.—This oil resembles the oil of peppermint and spearmint, and may be regarded as superfluous.

Oleum fœniculi dulcis. Oil of Sweet Fennel. Ph. Dub.—The flavour of this oil is similar to that of Anise.

OLEUM RUTÆ. Oil of Rue. Ph. Dub.—The flavour of oil of rue is ungrateful, and though it has been regarded as an emmenagogue, it is altogether discarded from use.

Under the Chapter of Volatile Oils are inserted some other preparations besides the Essential Oils of Plants.

OLEUM SUCCINI ET ACIDUM SUCCINI. Oil of Amber and Acid of Amber. (Ol. Succini, *Ph. Lond. Dub.*—Acid. Succini, *Ph. Dub.*)

"Take of Amber in powder, Pure Sand, equal parts. Put them mixed together into a glass retort, of which they shall fill one-half. Having adapted a large receiver, distil from a sand-bath, with a fire gradually raised. First, a watery liquor with a little yellow oil will distil over; then a yellow oil with an acid salt; afterwards, a reddish and black oil. Pour the liquor out of the receiver, and let the oil be separated from the water. Let the acid salt, collected from the neck of the retort and the sides of the receiver, be pressed between folds of bibulous paper, and freed from the adhering oil. Then purify it by solution in hot water and crystallization."

OLEUM SUCCINI PURISSIMUM. Purified Oil of Amber.

"Distil Oil of Amber mixed with six times its weight of Water, from a glass retort, until two-thirds of the water have passed into the receiver. Then separate this purified volatile oil from the water, and keep it in vessels well stopt."

The Dublin College retain both the Acid and Oil of Amber, and give nearly the same directions for their preparation. The London College admit the oil only.

Amber is a bituminous substance found in layers of bituminated wood, or in fragments or masses on the seashore in different countries, the origin or natural formation of which is not well ascertained. It is also possessed of peculiar characters; for although it approaches to the vegetable resins in a number of its properties, it differs in others, and differs remarkably in the products it affords when decomposed by heat. These products are an acid *sui generis*, which being procured from no other substance, receives from this bitumen the name of Succinic Acid; and a peculiar empyreumatic oil. The process is conducted according to the directions given in the Pharmacopœia. The heat requires to be raised gradually, and the interposition of the sand is useful by dividing the particles of amber, and preventing it, when it melts, from swelling up, and passing over into the receiver.

The succinic acid is in part dissolved by the water which condenses in the receiver, but the greater part is condensed in the form of a crust. When purified from the adhering oil, it is obtained in minute crystals, rhomboidal plates, of a brownish colour from a little oil still adhering to it; these are rather sparingly soluble in water, requiring 24 parts at 60° for their solution: the taste of this acid is penetrating and slightly sour; it reddens the vegetable colours, is soluble in alkohol, volatile and inflammable. In medicine it has been regarded as an

antispasmodic and diuretic; but it appears to be wholly inactive, and is altogether discarded from practice.

The oil of amber procured by the first distillation is thick, of a dark brown colour, and a very fœtid smell; by successive distillations it is obtained of a thinner consistence and lighter colour, and can at length be rendered nearly limpid. Its smell still remains, however, peculiar, and ungrateful: its taste is hot and acrid; it is volatile and inflammable, insoluble in water, and sparingly soluble in alkohol. In medical practice it has been celebrated as a stimulant and antispasmodic, and has been given in amenorrhœa and hysteria in a dose from 10 to 15 drops. Its internal administration is, however, entirely relinquished. Externally it is sometimes applied by friction as a stimulant in paralysis, and to relieve the pain of cramp and rheumatism; but its strong unpleasant smell renders the application extremely disagreeable.

Oleum volatile pini purissimum, *olim Oleum Terebinthinæ purissimum.* Rectified Oil of Turpentine. (Oleum Terebinthinæ Rectificatum, *Ph. Lond. Dub.*).

"Take of Oil of Turpentine, one pound; Water, four pounds. Distil as long as any oil passes over."

The oil of turpentine of commerce is obtained by distillation from what is named Common Turpentine, the juice of the *Pinus Larix*, or sometimes from the wood of the tree. It appears to contain a small portion of resinous matter, as when distilled it leaves a little of a thick residuum, and the distilled oil has been said to be more

volatile. The process, however, is difficult to perform, from the great volatility of the oil, and the diffusibility of its vapour; it is one too wholly superfluous, the common oil being sufficiently pure for any purpose to which it requires to be applied in medicine, and it is accordingly never attended to in the shops. The medicinal properties of this oil have been already considered.

OLEUM CORNU CERVINI RECTIFICATUM. Rectified Oil of Hartshorn. Ph. Dub. (Oleum Animale. Animal Oil).

"Take of the Oil which rises in the distillation of the volatile liquor of Hartshorn, three pounds; Water, six pounds. Distil the oil, mix it again with water, and distil it a second time; repeat this operation frequently until it become limpid. It must be kept in small phials quite filled with it, closely stopt, and in a dark place."

Animal substances submitted to heat suffer decomposition, their elements entering into new combinations, and one of the principal products of these combinations is empyreumatic oil, formed from the combination of portions of the hydrogen and carbon of the animal matter. This product is obtained abundantly in the decomposition of bone or horn by heat, along with the carbonate of ammonia formed in the same process. It is at first thick, of a dark brown colour, and offensive odour: but by repeated distillations from water it is rendered thinner, more limpid, and less offensive. In this rectified state it has been celebrated as a stimulant and antispasmodic, but is discarded from modern practice.