

Laudanum

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General Info

From: www.drugmuseum.org

Laudanum is a mixture of opium and alcohol.

Paracelsus (1493 — 1541), the father of chemical drugs for specific ailments, was credited with the introduction of opium into the field of medicine, and for the first formulation of "Laudanum". The Laudanum developed by Paracelsus was a solid preparation of opium, which is an extract from a particular type of poppy. In the 17th century, pharmacists created a tincture using the solid



opium, which quickly became the typical form of Laudanum. (A "tincture" is a mixture of a medicinal substance with alcohol.)

In frontier times, Laudanum — also referred to as "Black Drop", "Quaker Laudanum" "Vinegar of Opium" and "Tincture of Opium" — was widely used for a variety of purposes. Prior to the passage of the Harrison Narcotic Act of 1914, Laudanum and other narcotics could be purchased from the pharmacist in the drugstore by declaring the use of the preparation on a registry book. These books — some of which are on display at the Frontier Drug Store Museum — give clear clues to the uses of Laudanum: for childbirth, dental procedures and other pain problems, terminal disease, tuberculosis, and of course for "habit" or addiction.



During the 20th century, drug researchers isolated the most effective constituents of opium for managing pain, including morphine. This advancement diminished the need for non-derivative opium solutions such as Laudanum, and it is almost never used today.

From: www.wikipedia.org

Laudanum is an alcoholic tincture of opium, sometimes sweetened with sugar and also called *wine of opium*.

In the 16th century, a Swiss physician named Paracelsus (1493–1541) experimented with the medical value of opium. He decided that its medical (analgesic) value was of such magnitude that he called it Laudanum, from the Latin *laudare*, to praise, or from *labdanum*, the term for a plant extract. He did not know of its addictive properties.

In the 19th century, laudanum was used in many patent medicines to "relieve pain... to produce sleep... to allay irritation... to check excessive secretions... to support the system... [and] as a sudorific". The lack of any genuine treatments meant that opium derivatives were one of the few substances that had any effect, and so laudanum was prescribed for ailments from colds to meningitis to cardiac diseases, in both adults and children.

The Romantic and Victorian eras were marked by the widespread use of laudanum in England, Europe and the United States. Initially a working class drug, laudanum was cheaper than a bottle of gin or wine, because it was treated as a medication for legal purposes, not taxed as an alcoholic beverage. Notable addicted literary figures include: Coleridge, who miserably battled his addiction for much of his adult life; de Quincey; Byron; Shelley, who suffered raging laudanum-induced hallucinations; Dickens; Lewis Carroll and Baudelaire. There were also political figures (Wilberforce, Meriwether Lewis) who used the drug.

Innumerable Victorian women were prescribed the drug for relief of menstrual cramps and vague aches, and used it to achieve the pallid complexion associated with tuberculosis (frailty and paleness were prized in females at the time). Nurses spoon-fed laudanum to infants, many of whom mysteriously died from overdoses.

The character of Oscar Hopkins in Peter Carey's novel *Oscar and Lucinda* (1988) uses **laudanum** (initially under duress) to dull his hydrophobia during his expedition from Sydney.

Laudanum also features in historical fiction. In the Aubrey-Maturin series of novels (which starts with *Master and Commander*), the ship's surgeon, Stephen Maturin, both uses the drug professionally and battles his own addiction to it.

Opium,—Opium.

Nature and Source. The concrete, milky exudation, obtained by incising the unripe capsules of *Papaver somniferum*, the white Poppy, an annual herb of the nat. ord. Papaveraceae. In its normal, moist condition, it should yield not less than 9 per cent. of Morphine, when assayed by the official process. It contains 17 alkaloids, 2 neutral bodies, 2 organic acids,—also wax, gum, sugar, resin, extractives, odorous principles, etc. The six principal alkaloids of Opium are—

Morphina, Morphine, Dose, gr. 1/20-1/2;—hypnotic, anodyne and narcotic.

Codeina, Codeine, Dose, gr. 1/5-j ;—calmative, and less constipating.

**Thebaina*, Thebaine,—a tetanizer; not used medicinally.

**Narceina*, Narceine, gr. 1/8-1/2 ;—probably the most hypnotic of the six.

**Papaverina*, Papaverine ;—action doubtful, narcotic and convulsant (?).

**Narcotina*, Narcotine, Dose, gr. j-v;—wrongly named, having no narcotic action; is a tetanizer and highly antiperiodic,

These principles are combined in the plant with *Meconic* and *Lactic Acids*.

A Derivative of Morphine, obtained by the action of HCl acid, is—

Apomorphina, Apomorphine,—an artificial alkaloid and a powerful emetic; the Hydrochlorate of which is official, and may be administered in doses of gr. 1/8 by stomach, or gr. 1/16 hypodermically.

Preparations of Opium. The principal are—

Opium Pulvis, Powdered Opium. Dose, gr. 1/4-ij ;—gr. j is a medium dose.

Extractum Opium,—has 18 per cent. of Morphine. Dose, gr. 1/4-j.

Tinctura Opium, Tincture of Opium, (Laudanum),—Opium strength 10 p. c. ℥xj (gtt. xxij) about equal gr. j of Opium, or gr. 1/6 of Morphine Sulphate. Dose, ℥v-xxx, as per effect desired.

Tinctura Opium Deodorati, Tincture of Deodorized Opium.

Vinum Opium, Wine of Opium (Sydenham's Laudanum).

Acetum Opium, Vinegar of Opium (Black Drop).

[about above three:] All have Opium, strength 10 p.c., and Dose as the tincture.

Tinctura Opii Camphorata, Camphorated Tincture of Opium (Paregoric),—has nearly gr. j of Opium in ℥ss, therefore only 1/20th the strength of the tincture. Dose, for an infant, ℥v-xx,—for an adult, ℥j-iv.

**Tinctura Opii Composita*, Compound Tincture of Opium, Squibb's Diarrhoea Mixture,—has Tinct. Opii, Tinct. Capsici, Spt. Camphorae, aa ℥j, Chloroformi Purif., ℥iij, Alcoholis, ad ℥v. Dose, for infants, gtt. j-x; for children, gtt. x-xxx; for adults, ℥j.

Emplastrum Opii,—Ext. of Opium, Burgundy Pitch and Lead Plaster.

Pilulae Opii,—each pill has gr. j of powdered Opium with Soap.

Pulvis Ipecacuanhae et Opii, Dover's Powder,—Ipecac 1, Opium 1, Sugar of Milk 8 parts, triturated to a fine powder. Dose, gr. v-xv.

Tinctura Ipecacuanhae et Opii,—intended to represent Dover's Powder in liquid form; has of Tinct. Opii Deod. 100 evaporated to 80, Ext. Ipecac Fl. 10, Diluted Alcohol to 100. Dose, ℥v-xx.

Preparations of Morphine, etc.

Morphinae Acetas,—soluble when fresh in 2 1/2 of water. Dose, gr. 1/20-j.

Morphinae Hydrochloras,—soluble in 24 of cold water. Dose, gr. 1/20-j.

Morphinae Sulphas,—soluble in 21 of water and in 3/4 of boiling water; contains about 80 per cent. of Morphine. Dose, gr. 1/20-j, a medium adult dose being gr. 1/6.

Pulvis Morphinae Compositus, Tully's Powder,—gr. x contains gr. 1/6 of Morphine Sulphate, with Camphor, Liquorice and Calcium Carbonate.

**Tinctura Chloroformi et Morphinae*, (B.P.),—each 10-minim dose contains of Morphine Hydrochlorate, gr. 1/48, of Chloroform, ℥j 1/4, of Dilute HCN Acid, ℥ 5/8, with ether, alcohol, oil of peppermint, liquorice, treacle and syrup. Intended as a substitute for Chlorodyne, (see *ante*, [page 139](#)).

**Liquor Morphinae Sulphatis*, Magendie's Solution,—has gr. xvj of Morphine Sulphate in ℥j of Distilled Water, or gr. 1/4 in ℥vijss. Morphine in solution will change to Apomorphine if kept long.

**Liquor Morphinae Sulphatis*, U.S.P. 1870,—has gr. j of Morphine Sulphate to the ℥ of Distilled Water. Dose, ℥xxx-℥ss.

Codeina, Codeine,—soluble in 80 of water, in 17 of boiling water, and in 3 of alcohol. Dose, gr. 1/4-ij; but gr. 1/6 has produced alarming symptoms in children.

**Codeinae Phosphas*,—is sufficiently soluble for hypodermic use, 1 in 20 of water is the usual solution. Dose, as Codeine.

Changes in Opium Preparations. The official dried Opium should now contain 13 to 15 per cent. of Morphine, instead of 10 per cent., as required by the Phar. of 1870. The liquid preparations, except Paregoric, are required to be of the uniform Opium strength of 10 per cent. by weight, making the Wine 2 per cent. weaker, the Acetum 1/3 weaker, and the others 1/2 stronger in Morphine than formerly. So that, if the former full anodyne dose of Tincture be taken at ℥xxxiv, = gr. 1/4 of Morph. Sulph., the corresponding dose under the new system will be ℥xvj.

Tests for Morphine. Nitric Acid produces a blood red, turning orange, then yellow, then disappearing. Ferric Chloride gives a rich blue with Morphine, a dark brown with Meconic Acid or any preparation of Opium. Iodic Acid liberates Iodine, which may be tested by starch.

Minimum Fatal Dose of Opium. In a child one day old ℥j of Laudanum was fatal ; and in another aged nine months a few drops of Paregoric caused death. In the adult gr. 1/6 of Morphine, or gr. iv of Opium have proved fatal.

Treatment of Opium Poisoning. The chief indications are—to evacuate the stomach, maintain respiration, and keep up the circulation. *Potassium Permanganate*, in dose one-half greater than the amount of Morphine ingested, is said to be a perfect antidote to Opium or Morphine in the stomach. *Atropine* antagonizes its cerebral action, also its action on the pupil, respiration, heart and arterial tension (?), but if given too freely will endanger the case by substituting Belladonna narcosis for Opium narcosis ; gr. 1/120, hypodermically, every 15 minutes, for three doses, is generally sufficient. *Strychnine*, *Coffee*, *Caffeine*, and *Cocaine* are also physiologically antagonistic to Morphine. *Faradization* of the chest muscles, cold affusion and artificial respiration are of great value. *Flagellation* is a very dangerous procedure, from the exhaustion produced ; strong faradic currents are much more efficient. *Evacuation of the bladder* is important, to prevent reabsorption.

Physiological Action. Opium is analgesic, hypnotic, diaphoretic, antispasmodic, narcotic, also a cardiac and respiratory depressant, after primary brief stimulation thereof. In medium dose (gr. j),—it dries all the secretions, except those of the breasts and the skin, the latter being increased , produces dryness of the mouth and throat, arrest of the gastric secretion, retarded digestion and anorexia; stimulates the brain by increasing the blood supply; and does not affect the conductivity of the nerves. The action of the heart is increased, and the arterial tension raised the pupils slightly contracted ; the mind, at first stimulated, becomes calm ; sleep follows, disturbed by dreams; and headache, constipation and some depression result.

In Full Dose (gr. v),—it arrests digestion ; causes nausea and vomiting ; greatly increases the sweat ; prevents the conductivity of the nerves ; depresses the heart and circulation, impairing oxidation and lowering temperature ; contracts the pupil by stimulating the motor oculi ; causes intense pruritus, especially of the nose; often retention of urine; and soon profound sopor (in some cases coma-vigil, delirium) ; leaving as after-effects nausea, depression, constipation, vertigo, anorexia, nasal pruritus, fetid pathological secretions.

A Toxic Dose produces cold, clammy sweat, very slow heart, abolished reflexes, coma; the pupil minutely contracted, but dilated as the end approaches; and death by suspension of respiration, due to the direct action of the poison on the respiratory centres in the medulla.

Post-mortem shows only a wet brain, congested lungs, and engorgement of the venous trunks and the right side of the heart.

Morphine and Codeine. As compared with the action of Opium, that of *Morphine* is more anodyne and hypnotic. It causes more intense pruritus, is less stimulant, less convulsant, less constipating and less diaphoretic. *Codeine* may be considered chemically a Methyl-morphine, and like all methyl compounds has an action similar to that of Curare, viz.—motor-paralyzant. It exalts the spinal cord more than Morphine, and affects the cerebrum less, producing muscular tremor in excess of sedation. It reduces the urinary sugar in diabetes, and has a selective sedative influence on the pneumogastric.

Therapeutics. The chief indications for the use of Opium are (1) to relieve pain ; (2) to produce sleep ; (3) to allay irritation; (4) to check excessive secretions ; (5) to support the system; (6) as a sudorific. It is badly borne usually by women and children, and in some persons great nausea and depression follow its use, which may usually be averted by the

conjoined administration of Potassium Bromide, Hydrobromic Acid, or Spirit of Ether, with each dose of the opiate used. It is especially valuable in—

Pain from any cause except acute inflammation of the brain.

Low Fevers when insomnia and low muttering delirium, and to support the system when sufficient food cannot be taken or retained.

Irritation of the bronchi, bladder, stomach, as in acute severe vomiting.

Peritonitis,—used freely, even to narcotism, it has often saved life.

Diarrhoea, Dysentery, Enteritis, etc.,—it is a very efficient remedy.

Acute Uraemia,—Loomis urges its use to control convulsions and promote diuresis; large doses required in this condition.

Colds and Muscular Rheumatism,—Dover's powder as a diaphoretic, conjoined with hot drinks and hot foot-baths.

Gastralgia,—no remedy equal to Morphine and Bismuth Subnitrate.

Colic,—rectal suppositories containing the Aqueous Extract of Opium.

Spasm,—Morphine hypodermically in muscular spasm, is efficient.

Cholera Morbus and Dysentery,—gr. 1/12 of Morphine with gr. 1/120 of Atropine, promptly effective after ingesta removed by an active cathartic.

Serous Inflammation,—the Deodorized Tincture to slight narcotism.

Cerebro-spinal Meningitis,—Opium the one remedy if given early, before exudation has set in.

Superficial Inflammations,—Opium or Morphine locally, of great value.

Diabetes Mellitus,—Codeine or Morphine per orem reduce the sugar promptly, but have little or no effect when used hypodermically.

Dyspnoea from any cause is relieved by Morphine, especially that of cardiac disease. "It gives the power to breathe " (Huchard).

Cardiac Disease, especially aortic stenosis or insufficiency, with dyspnoea, paroxysms of angina pectoris, or signs of cerebral anaemia,—Morphine hypodermically presents the greatest advantages.

Hemorrhages, especially uterine, due to fibroids or cancer,—the influence of Opium on the circulation is invaluable.

Contraindications for the use of Opium are—alcoholism, disease of the respiratory organs, advanced disease of the kidneys, and some forms of cerebral congestion and cardiac disease.

Tinctura Opii (U. S. P.)—Tincture of Opium.

SYNONYMS: *Laudanum, Tinctura meconii, Tinctura thebaica.*

Preparation.—"Powdered opium, one hundred grammes (100 Gm.) [3 ozs. av., 231 grs.]; precipitated calcium phosphate, fifty grammes (50 Gm.) [1 oz. av., 334 grs.]; water, four hundred cubic centimeters (400 Cc.) [13 fl ℥, 252 ℥]; alcohol, four hundred cubic centimeters (400 Cc.) [13 fl ℥, 252 ℥]; diluted alcohol, a sufficient quantity to make one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. Rub the powders, in a mortar, with the water previously heated to the temperature of 90° C. (194° F.), until a smooth mixture is made, and macerate for 12 hours; then add the alcohol, mix thoroughly, and transfer the whole to a cylindrical percolator. Return to the percolator the first portion of the percolate, until it runs through clear, and, when the liquid ceases to drop, gradually pour on diluted alcohol,

continuing the percolation slowly, until one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥] of tincture are obtained"—(U. S. P.).

History and Description.—This tincture is universally known in this and other English-speaking countries as *laudanum*. It has been known throughout Europe as *Laudanum Liquidum Simplex*, in contradistinction to solid opium preparations, which were also called by the name *laudanum*, usually with some qualifying term, as *Laudanum Antihystericum*, etc. Tincture of opium has a deep red-brown color, and the characteristic odor and taste of opium. Lest concentration take place, through evaporation of its alcohol, it should be kept in securely-stoppered bottles. Each fluid drachm represents 5.7 grains of dry opium, or 1 grain of opium in about 10.5 minims of the tincture.

In preparing this tincture, it is essential that well-dried opium should be used, to insure a full-strength product, and it should be in a finely-powdered form. The admixture with calcium phosphate aids in its percolation, which could not otherwise be readily accomplished with diluted alcohol. The percolate passes slowly, and about 60 per cent of the opium constituents are obtained in solution by the use of the diluted alcohol. The Pharmacopoeia directs the drug to be macerated 12 hours previous to percolation. Twice that length of time, however, will better insure the complete disintegration of the opium. After completion of the percolation, water should abstract nothing from the dried residue, and only mere traces of alkaloids, or their compounds, should be abstracted by diluted acids.

VALUATION.—"If 100 Cc. of tincture of opium be assayed by the process immediately following, it should yield from 1.3 to 1.5 Gm. of crystallized morphine"—(U. S. P.).

ASSAY OF TINCTURE OF OPIUM.—"Tincture of opium, one hundred cubic centimeters (100 Cc.) [3 fl ℥, 183 ℥] ammonia water, three and five-tenths cubic centimeters (3.5 Cc.) [57 ℥]; alcohol, ether, water, each, a sufficient quantity. Evaporate the tincture to about 20 Cc., add 40 Cc. of water, mix thoroughly, and set the liquid aside for an hour, occasionally stirring, and disintegrate the resinous flakes adhering to the capsule. Then filter, and wash the filter and residue with water, until all soluble matters are extracted, collecting the washings separately. Evaporate in a tared capsule, first, the washings to a small volume, then add the first filtrate, and evaporate the whole to a weight of 14 Gm. Rotate the concentrated solution about in the capsule until the rings of extract are redissolved, pour the liquid into a tared Erlenmeyer flask having a capacity of about 100 Cc., and rinse the capsule with a few drops of water at a time, until the entire solution weighs 20 Gm. Then add 10 Gm. (or 12.2 Cc.) of alcohol, shake well, add 25 Cc. of ether, and shake again. Now add the ammonia water from a graduated pipette or burette, stopper the flask with a sound cork, shake it thoroughly during 10 minutes, and then set it aside, in a moderately cool place, for at least 6 hours, or over night. Remove the stopper carefully, and, should any crystals adhere to it, brush them into the flask. Place in a small funnel 2 rapidly acting filters, of a diameter of 7 Cm., plainly folded, one within the other (the triple fold of the inner filter being laid against the single side of the outer filter), wet them well with ether, and decant the ethereal solution as completely as possible upon the inner filter. Add 10 Cc. of ether to the contents of the flask, rotate it, and again decant the ethereal layer upon the inner filter. Repeat this operation with another portion of 10 Cc. of ether. Then pour into the filter the liquid in the flask, in portions, in such a way as to transfer the greater portion of the crystals to the filter, and, when this has passed through, transfer the remaining crystals to the filter by washing the flask with several portions of water, using not more than about 10 Cc. in all. Allow the double filter to drain, then apply water to the crystals, drop by drop, until they are practically free from mother water, and afterward wash them, drop by drop from a pipette, with alcohol previously saturated with powdered

morphine. When this has passed through, displace the remaining alcohol by ether, using about 10 Cc., or more, if necessary. Allow the filter to dry in a moderately warm place, at a temperature not exceeding 60° C. (140° F.), until its weight remains constant, then carefully transfer the crystals to a tared watch-glass and weigh them. The weight found represents the amount of crystallized morphine obtained from 100 Cc. of the tincture"—(U.S. P.).

Action, Medical Uses, and Dosage.—This tincture, occasionally termed *Tinctura Thebaica*, possesses the medicinal virtues of opium, and may be used in all cases where the drug is indicated, in doses of from 5 to 30 drops (see [Opium](#) (92 kB!)).

- **Related Preparations.**—**TINCTURA OPII ACETATA.** If diluted acetic acid be employed instead of water, it will form a much better tincture of opium, and one less liable to vary in strength (TINCTURA OPII ACETATA, or *Acetated Tincture of Opium*), and which may be given in the same doses as above. It is, however, seldom prescribed at the present day. The U. S. P. (1870) directed 2 troy ounces of dry-powdered opium to be macerated for 7 days in a mixture of 8 fluid ounces of alcohol and 12 fluid ounces of distilled vinegar; express and filter. Twenty fluid ounces are obtained. One grain of opium is contained in each 10 minims.
- **TINCTURA OPII MURIATICA.**—In a mixture of hydrochloric acid, 1 fluid ounce, and water, 15 fluid ounces, macerate 1 ounce of powdered opium for 14 days, and filter. Then add sufficient water to make 1 pint of tincture. No alcohol is present. This is not quite half as strong as tincture of opium.
- **TINCTURA PAPAVERIS (N. F.), *Tincture of poppy.***—"Poppy capsules, freed from seeds, and in coarse powder, five hundred grammes (500 Gm.) [1 lb. av., 1 oz., 279 grs.]; glycerin, one hundred and twenty-five cubic centimeters (125 Cc.) [4 fl ℥, 109 ℥]; alcohol, water, of each, a sufficient quantity to make one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. Digest the poppy capsules with three thousand cubic centimeters (3000 Cc.) [101 fl ℥, 212 ℥] of boiling water during 2 hours, then express and strain. Evaporate the strained liquid to five hundred cubic centimeters (500 Cc.) [16 fl ℥, 435 ℥], mix it with two hundred and fifty cubic centimeters (250 Cc.) [8 fl ℥, 218 ℥] of alcohol, and set the mixture aside, well covered, until it is quite cold. Then filter, add the glycerin to the filtrate, and pass enough of a mixture of two (2) volumes of water and one (1) volume of alcohol through the filter, to make the product measure one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. Each fluid drachm represents 30 grains of poppy (capsule) freed from seeds"—(Nat. Form.).

Tinctura Opii Deodorati (U. S. P.)—Tincture of Deodorized Opium.

SYNONYM: *Tinctura opii deodorata* (U. S. P., 1880).

Preparation.—"Powdered opium, one hundred grammes (100 Gm.) [3 ozs., av., 231 grs.]; precipitated calcium phosphate, fifty grammes (50 Gm.) [1 oz. av., 334 grs.]; ether, two

hundred cubic centimeters (200 Cc.) [6 fl ℥, 366 ℥] alcohol, two hundred cubic centimeters (200 Cc.) [6 fl ℥, 366 ℥]; water, a sufficient quantity to make one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. Rub the powders in a mortar with four hundred cubic centimeters (400 Cc.) [13 fl ℥, 252 ℥] of water, previously heated to the temperature of 90° C. (194° F.), until a smooth mixture is made, and macerate for 12 hours; then pour the mixture on a filter, or transfer it to a cylindrical percolator, and gradually pour on water until the opium is practically exhausted. Reduce the percolate, by evaporation on a water-bath, to one hundred cubic centimeters (100 Cc.) [3 fl ℥, 183 ℥], and, when it has cooled, shake it repeatedly with the ether in a bottle. When the ethereal solution has separated by standing, pour it off, and evaporate the remaining liquid until all traces of ether have disappeared. Mix the residue with five hundred cubic centimeters (500 Cc.) [16 fl ℥, 435 ℥] of water, and filter the mixture through paper. When the liquid has ceased to pass, add enough water, through the filter, to make the filtered liquid measure eight hundred cubic centimeters (800 Cc.) [27 fl ℥, 25 ℥]. Lastly, add the alcohol, and mix them"—(U.S. P.).

Test.—"If 100 Cc. of tincture of deodorized opium be assayed by the process given under [Tinctura Opium](#), it should yield from 1.3 to 1.5 Gm. of crystallized morphine"—(U. S. P.).

Several *elixirs of opium* and a denarcotized tincture of opium are upon the market, which this preparation is designed to displace. Tincture of denarcotized opium contains the same amount of opium as tincture of opium, i.e., 1 grain in about every 10.5 minims. It is not so dark in color as laudanum. The drug is deprived of its narcotine and odor-giving principles by means of the ether employed. This is successfully, though somewhat difficultly, performed by following the official directions. The trouble is due to the formation of an emulsion produced by shaking together the concentrated aqueous preparation and the ether. This may be avoided, according to Prof. Maisch, if the opium be first denarcotized and deodorized, and an infusion made and evaporated to the necessary quantity, and the requisite amount of alcohol added to bring the tincture to the desired strength. Benzin has been suggested to denarcotize and deodorize this preparation, but it is not suitable, as it leaves its own disagreeable odor.

Action, Medical Uses, and Dosage.—(See [Opium](#). (92 kB!)) Dose, from 10 to 20 minims.

Related Preparation.—The following was offered to the profession by Eugene Dupuy, a pharmacist of New York, as a substitute for *McMunn's Elixir of Opium*. It is said that none of the unpleasant effects attributed to laudanum have as yet attended its administration: Take of opium, 10 drachms, make it into a thin pulp, with a sufficient quantity of water; then allow the mixture to stand in a cool place 48 hours, after which transfer it to an elongated glass funnel containing filtering paper, and add a superstratum of water equivalent to the bulk of the whole mass. When 12 ounces of liquid have filtered, add to the filtered solution alcohol (95 per cent), 4 ounces. The solution is an aqueous solution of opium, nearly free from narcotine, preserved by alcohol, and contains about two-thirds of the substance of the opium—the residue consisting chiefly of resin, narcotine, caoutchouc, ligneous matter, etc.

Tinctura Opii Camphorata (U. S. P.)—Camphorated Tincture of Opium.

SYNONYMS: *Paregoric*, *Elixir paregoricum*, *Paregoric elixir*.

Preparation.—"Powdered opium, four grammes (4 Gm.) [62 grs. benzoic acid, four grammes (4 Gm.) [62 grs.]; camphor ([more](#)), four grammes (4 Gm.) [62 grs.]; oil of anise, four cubic

centimeters (4 Cc.) [65 ℥]; glycerin, forty cubic centimeters (40 Cc.) [1 fl ℥, 169 ℥]; diluted alcohol, a sufficient quantity to make one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. Add nine hundred cubic centimeters (900 Cc.) [30 fl ℥, 208 ℥] of diluted alcohol to the other ingredients, contained in a suitable vessel, and macerate for 3 days, shaking frequently; then filter through paper, in a well-covered funnel, and pass enough diluted alcohol through the filter to make the product measure one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]"—(U. S. P.). This tincture has a brown-yellow color, a sweetish and somewhat bitter, sharply aromatic taste, and an odor resembling that of camphor and anise combined. In reaction it is acid, and, when added to water, renders the latter milky. It contains, in every 263 minims, 1 grain of opium. True benzoic acid should be preferred to that made from the urine of herbivorous animals.

Action, Medical Uses, and Dosage.—This is a very valuable and useful opiate, which is efficient in allaying troublesome *cough*, *nausea*, *whooping-cough*, slight *gastric and intestinal pains*; to cause sleep, and palliate *diarrhoea*. The dose for an adult is 1 to 2 fluid drachms; for an infant, 5 to 10 or 20 drops.

Related Preparations.—The liquids known by the names of *Godfrey's Cordial*, and *Bateman's Drops*, two very dangerous articles in the hands of nurses and many non-professional persons, are generally prepared as follows:

- **GODFREY'S CORDIAL.**—Dissolve carbonate of potassium, 6 drachms, in water, 6 1/2 pints; add sugar-house molasses, 4 pints, and gently heat them to form a solution, removing any scum which floats upon the surface. Remove from the fire and add laudanum, 6 fluid ounces; alcohol, 8 fluid ounces, in which has been dissolved 1 fluid drachm of oil of sassafras. A fluid drachm of this cordial is equivalent to somewhat more than 1/4 grain of opium.
- **BATEMAN'S PECTORAL DROPS.**—Take powdered opium, powdered catechu, camphor, red saunders, rasped, each, 2 drachms; oil of anise, 1/2 fluid drachm; diluted alcohol, 4 pints. Mix and macerate for 12 or 14 days. Two fluid drachms are equivalent to about 1/2 grain of opium. The following is the modified formula of the *National Formulary*:
- **TINCTURA PECTORALIS (IN. F.),** *Pectoral tincture, Guttæ pectorales, Pectoral drops, Bateman's pectoral drops.*—"Tincture of opium (U.S. P.), forty-two cubic centimeters (42 Cc.) [1 fl ℥, 202 ℥]; compound tincture of catechu (U.S. P.), thirty cubic centimeters (30 Cc.) [1 fl ℥, 7 ℥]; spirit of camphor (U. S. P.), forty cubic centimeters (40 Cc.) [1 fl ℥, 169 ℥]; oil of anise, one cubic centimeter (1 Cc.) [16 ℥]; caramel, sixteen cubic centimeters (16 Cc.) [260 ℥]; diluted alcohol (U. S. P.), a sufficient quantity to make one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. Mix the first 5 ingredients with enough diluted alcohol to make one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥], and filter. Each fluid drachm contains 2 1/2 minims of tincture of opium"—(*Nat. Form.*).

- **TINCTURA OPII AMMONIATA**, *Ammoniated tincture of opium*.—Take of "tincture, of opium, 3 fluid ounces (Imp.), or 150 cubic centimeters (Metric); benzoic acid, 180 grains, or 20.6 grammes; oil of anise, 1 fluid drachm, or 6.25 cubic centimeters; solution of ammonia, 4 fluid ounces, or 200 cubic centimeters; alcohol (90 per cent), a sufficient quantity. Dissolve the oil of anise and the benzoic acid in 12 fluid ounces (or 600 cubic centimeters) of the alcohol; add the tincture of opium and the solution of ammonia; mix well; filter; add enough of the alcohol to form 1 pint (or 1000 cubic centimeters) of the tincture. Dose, 1/2 to 1 fluid drachm. This preparation contains the soluble matter of nearly 0.62 grain of opium (containing 10 per cent of morphine, reckoned as anhydrous) in 1 fluid drachm, or of nearly 5 grains of such opium in 1 fluid ounce"—(*Br. Pharm.*, 1898). This preparation is formulated after the old *Edinburgh Pharmacopoeia* formula for *Elixir Paregoricum Scoticum*, or *Scotch Paregoric Elixir*, and was used to fulfil the same indications that our paregoric is designed to meet. The excess of ammonia employed and the alcohol hold the opium alkaloids in solution in a free condition. A weaker solution of ammonia would be apt to precipitate the morphine. It is an unsatisfactory preparation, and has once been discarded by the *British Pharmacopoeia*. Being much used by the people of Great Britain, it has been reinstated. About 1 grain of opium is represented in every 90 minims.

Extractum Opii (U. S. P.)—Extract of Opium.

Preparation.—"Powdered opium, one hundred grammes (100 Gm.) [3 ozs.av., 231 grs.]; sugar of milk, recently dried and in fine powder, water, each, a sufficient quantity. Triturate the powdered opium in a mortar thoroughly with one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥] of water, repeat the trituration occasionally, in the course of 12 hours, then filter through a rapidly acting, double filter, and wash the filter and residue with water, until the filtrate is nearly colorless. Concentrate the filtrate and washings in a tared capsule, on a water-bath, until the residue weighs about two hundred grammes (200 Gm.) [7 ozs. av., 24 grs.], and allow it to become cold. Then determine the weight exactly, transfer twelve grammes (12 Gm.) [185 grs.] of it to an Erlenmeyer flask, having a capacity of about one hundred cubic centimeters (100 Cc.) [3 fl ℥, 183 ℥], and determine in this portion the amount of morphine by the process of assay given below, using the quantities of liquids there directed for four grammes (4 Gm.) [62 grs.] of the dry extract. In another portion of five grammes (5 Gm.) [77 grs.] determine the amount of water by drying it in a flat-bottomed capsule, at 100° C. (212° F.), until it ceases to lose weight. From the results thus obtained ascertain, by calculation, the amount of morphine and of water contained in the remainder of the extract, add to this enough well-dried sugar of milk to bring the quantity of morphine in the final dry extract to 18 per cent, then evaporate the whole to dryness, reduce it to powder, and transfer it to small, well-stoppered vials"—(U. S. P.).

ASSAY (U. S. P.), *Assay of Extract of Opium*.—"Extract of opium, dried at 100° C. (212° F.), four grammes (4 Gm.); ammonia water, two and two-tenths cubic centimeters (2.2 Cc.); alcohol, ether, water, each, a sufficient quantity. Dissolve the extract of opium in 30 Cc. of water, filter the solution through a small filter, and wash the filter and residue with water, until all soluble matters are extracted, collecting the washings separately,. Evaporate in a tared capsule, first, the washings to a small volume, then add the first filtrate, and evaporate the whole to a weight of 10 Gm. Rotate the concentrated solution about in the capsule until the rings of extract are redissolved, pour the liquid into a tared Erlenmeyer flask having a

capacity of about 100 Cc., and rinse the capsule with a few drops of water at a time, until the entire solution weighs 15 Gm. Then add 7 Gm. (or 8.5 Cc.) of alcohol, shake well, add 20 Cc. of ether, and shake again. Now add the ammonia water from a graduated pipette or burette, stopper the flask with a sound cork, shake it thoroughly during 10 minutes, and then set it aside, in a moderately cool place, for at least 6 hours, or over night.

"Remove the stopper carefully, and, should any crystals adhere to it, brush them into the flask. Place in a small funnel 2 rapidly-acting filters of a diameter of 7 Cm., plainly folded, one within the other (the triple fold of the inner filter being laid against the single side of the outer filter), wet them well with ether, and decant the ethereal solution as completely as possible upon the inner filter. Add 10 Cc. of ether to the contents of the flask, rotate it, and again decant the ethereal layer upon the inner filter. Repeat this operation with another portion of 10 Cc. of ether. Then pour into the filter the liquid in the flask, in portions, in such a way as to transfer the greater portion of the crystals to the filter, and, when this has passed through, transfer the remaining crystals to the filter by washing the flask with several portions of water, using not more than about 10 Cc. in all. Allow the double filter to drain, then apply water to the crystals, drop by drop, until they are practically free from mother-water, and afterwards wash them, drop by drop, from a pipette, with alcohol previously saturated with powdered morphine. When this has passed through, displace the remaining alcohol by ether, using about 10 Cc., or more, if necessary. Allow the filter to dry in a moderately warm place at a temperature not exceeding 60° C. (140° F.), until its weight remains constant, then carefully transfer the crystals to a tared watch-glass and weigh them. The weight found, multiplied by 25, represents the amount of crystallized morphine obtained from 100 Gm. of the extract"—(U. S. P.).

Description, Medical Uses, and Dosage.—(See [Opium](#)). This is essentially a purified extract, the inert matter having been removed in its preparation. It has been found that many persons who can not take the crude drug without experiencing many unpleasant symptoms, can take the extract without its being followed by any of these symptoms. The dose is 1/4 to 1/2 grain. The extract may be combined with other extracts, and may, if desired, be dissolved in water.

Extractum Opii Liquidum.—Liquid Extract of Opium.

Preparation.—The *British Pharmacopoeia* directs the preparation of this fluid extract of opium as follows: "Take of extract of opium 1 ounce (av.), distilled water 16 fluid ounces, rectified spirit 4 fluid ounces. Macerate the extract of opium in the water for an hour, stirring frequently; then add the spirit and filter. The product should measure 1 pint (Imp). It contains 22 grains of extract of opium, nearly, in 1 fluid ounce. Sp. gr., from 0.985 to 0.995"—(Br. Ph.). In point of non-nauseating qualities this preparation is superior to other liquid preparations of opium, except the deodorized tincture of opium. This preparation contains those principles of opium soluble in water, and is preserved by the presence of the alcohol, which proportion, according to some pharmacists, should be somewhat increased to give it greater stability.

Medical Uses and Dosage.—Uses, same as [Opium](#). Dose, 10 to 30 minims.

Linimentum Opii.—Liniment of Opium.

SYNONYM: *Anodyne liniment*.

Preparation.—Tincture of opium, liniment of soap, each, 2 fluid ounces. Mix.—(*Br. Pharm.*, 1885).

Action and Medical Uses.—This is an anodyne and mild rubefacient application in *contusions, sprains, neuralgic and rheumatic pains*, etc.

- **Related Liniment.**—**LINIMENTUM OPII COMPOSITUM (N. F.)**, *Compound liniment of opium, Canada liniment*. "Tincture of opium (U. S. P.), one hundred cubic centimeters (100 Cc.) [3 fl , 183]; camphor, seventeen and one-half grammes (17.5 Gm.) [270 grs.]; alcohol, two hundred and fifty cubic centimeters (250 Cc.) [8 fl , 218]; oil of peppermint, twenty-five cubic centimeters (25 Cc.) [406]; water of ammonia (U S. P.), three hundred and seventy-five cubic centimeters (375 Cc.) [12 fl , 327]; oil of turpentine, a sufficient quantity to make one thousand cubic centimeters (1600 Cc.) [33 fl , 391]. Dissolve the camphor and the oil of peppermint in the alcohol, then add the tincture of opium, water of ammonia, and enough oil of turpentine to make one thousand cubic centimeters (1000 Cc.) [33 fl , 391]. Shake the mixture whenever any of it is to be dispensed. *Note.*—This liniment will separate a short time after it has been mixed. It may be made somewhat more permanent by adding twenty-five cubic centimeters (25 Cc.) [406] of tincture of quillaja (U. S. P.), to the water of ammonia, before adding it to the mixture"—(*Nat. Form.*)

LINIMENTUM OPII AMMONIATUM, B.P.C. AMMONIATED LINIMENT OF OPIUM.

Ammoniated Liniment of Camphor	30.00	6 fl. ounces
Tincture of Opium	30.00	6 fl. ounces
Liniment of Belladonna	5.00	1 fl. ounce
Strong Solution of Ammonia	5.00	1 fl. ounce
Liniment of Soap	to 100.00 to 20 fl. ounces	

Mix, and allow to stand for seven days; then filter quickly.

Pulvis Opii Compositus.—Compound Powder of Opium.

Preparation.—"Take of opium, in powder, 1 1/2 ounces (av.); black pepper, in powder, 2 ounces (av.); ginger, in powder, 5 ounces (av.); caraway fruit, in powder, 6 ounces (av.); tragacanth, in powder, 1/2 ounce. Mix them thoroughly, pass the powder through a fine sieve, and finally rub it lightly in a mortar. Keep it in a stoppered bottle"—(*Br. Pharm.*, 1885 and 1898). This contains the dry constituents of confection of opium, 10 per cent of the latter being present.

Action, Medical Uses, and Dosage.—Used like confection of opium. Dose, 2 to 5 grains.

Syrupus Papaveris (N. F.)—Syrup of Poppy.

Preparation.—I. "Tincture of poppy (F. 416), eight hundred and seventy-five cubic centimeters (875 Cc.) [29 fl ℥, 282 ℥]; sugar, seven hundred and seventy-five grammes (775 Gm.) [1 lb. av., 11 ozs., 148 grs.]; water, a sufficient quantity to make one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. Evaporate the tincture of poppy on a water-bath, at a gentle heat, until its volume is reduced to four hundred and fifty cubic centimeters (450 Cc.) [15 fl ℥, 104 ℥]. In this dissolve the sugar with a gentle heat, strain, and when the syrup is cold, add enough water to make one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. *Note.*—The product is practically identical with the *Syrupus Papaveris* of the *British Pharmacopoeia*. The corresponding preparation of the *German Pharmacopoeia* (*Syrupus Papaveris*, or *Syrupus Diacodii*) is much weaker, and may be prepared as follows: II. Tincture of poppy (F. 416), one hundred and twenty-five cubic centimeters (125 Cc.) [4 fl ℥, 109 ℥]; syrup (U. S. P.), eight hundred and seventy-five cubic centimeters (875 Cc.) [29 fl ℥, 282 ℥]. Mix them"—(*Nat. Form.*).

Action, Medical Uses, and Dosage.—This syrup is anodyne and narcotic, though capable of doing mischief on account of the uncertain opium strength of the poppy capsules employed in preparing the tincture. The dose for small children is placed at 1/2 fluid drachm.

- **Related Preparation.**—**SYRUPUS IPECACUANHAE ET OPII (N. F.).** *Syrup of ipecac and opium, Syrup of Dover's powder.* "Fluid extract of ipecac (U. S. P.), eight and one-half cubic centimeters (8.5 Cc.) [138 ℥]; tincture of deodorized opium (U. S. P.), eighty-five cubic centimeters (85 Cc.) [2 fl ℥, 420 ℥]; sugar, seven hundred and seventy-five grammes (775 Gm.) [1 lb. av., 11 ozs., 148 grs.]; cinnamon water (U. S. P.), a sufficient quantity to make one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. Mix the fluid extract and tincture with three hundred and fifty cubic centimeters (350 Cc.) [11 fl ℥, 401 ℥] of cinnamon water, and filter the liquid; to this add the sugar and enough cinnamon water to make the product, after the sugar has been dissolved by agitation, measure one thousand cubic centimeters (1000 Cc.) [33 fl ℥, 391 ℥]. Each fluid drachm represents 5 grains of Dover's powder, or 1/2 grain, each, of ipecac and opium. *Note.*—In place of the above directed quantities of fluid extract of ipecac and tincture of deodorized opium, eighty-five cubic centimeters (85 Cc.) [2 fl ℥, 320 ℥] of the official *Tinctura Ipecacuanhae et Opii* may be taken"—(*Nat. Form.*).

This preparation may be used like [Dover's powder](#). The dose is from 1 to 2 fluid drachms.

Tinctura Chloroformi et Morphinæ.—Tincture of Chloroform and Morphine.

Preparation.—"Take of chloroform, 1 fluid ounce; ether, 2 fluid drachms; rectified spirit, 1 fluid ounce; hydrochlorate of morphine, 8 grains; diluted hydrocyanic acid, 1/2 fluid ounce; oil of peppermint, 4 minims; liquid extract of liquorice, 1 fluid ounce; treacle, 1 fluid ounce; syrup, a sufficiency. Diffuse the hydrochlorate of morphine and oil of peppermint in the spirit, and add the chloroform and ether. Mix the liquid extract of liquorice and treacle with 3 fluid ounces of syrup, add this to the previously formed solution, mix them thoroughly, add the hydrocyanic acid, and increase the volume to 8 fluid ounces by further addition of syrup"—(*Br. Pharm.*, 1885).

This preparation contains in a 10-minim dose, chloroform, 1 1/4 minims; ether, 1/3 minim; rectified spirit, 1 1/4 minims; morphine hydrochlorate, 1/43 grain; diluted hydrocyanic acid, 5/8 minim; oil of peppermint, 1/80 minim; and liquid extract of liquorice, 1 1/4 minims (also see *Related Compounds*, p. 1952 ([two paragraphs down](#))).

Action, Medical Uses, and Dosage.—This agent is an anodyne, and may be used in various forms of *colic*, in *cough*, and *delirium tremens*. Dose, 10 to 60 minims.

- **Related Preparations.**—**MISTURA CHLOROFORMI ET OPII** (N. F.), *Mixture of chloroform and opium, Chloroform anodyne*. "Purified chloroform, 2 fluid ounces; oil of peppermint, 16 minims; tincture of Indian cannabis, 2 fluid ounces; tincture of quillaja (N. F.), 2 fluid ounces; fluid extract of belladonna, 128 minims; deodorized tincture of opium, 2 3/4 fluid ounces; tincture of capsicum, 1 fluid ounce; purified extract of glycyrrhiza, 240 grains; water, 1/2 fluid ounce; syrup, enough to make 16 fluid ounces. Triturate the purified extract of glycyrrhiza with the water and 1 fluid ounce of the syrup until it is dissolved. Mix the fluid extract of belladonna, deodorized tincture of opium and tincture of capsicum, and add them to the solution first prepared. Then mix the chloroform, oil of peppermint, tincture of Indian cannabis, and tincture of quillaja, and add them to the mixture. Finally, add enough syrup to make 16 fluid ounces, and mix the whole thoroughly together. This mixture should be shaken whenever any of it is to be dispensed. Each fluid drachm represents 7 1/2 minims of chloroform, 7 1/2 minims of tincture of Indian cannabis, 3 3/4 minims of tincture of capsicum, 1 minim of fluid extract of belladonna, and about 1 grain of opium. *Note.*—This preparation is intended to fulfil the same purposes as the *Tinctura Chloroformi et Morphinæ* of the *British Pharmacopoeia*, though the composition of the latter differs materially from that of the mixture above given"—(*Nat. Form.*).
- **TINCTURA CHLOROFORMI ET MORPHINÆ COMPOSITA, Compound tincture of chloroform and morphine.**—Take of "chloroform, 1 1/2 fluid ounces (Imp.), or 75 cubic centimeters (Metric); morphine hydrochloride, 87 1/2 grains, or 10 grammes; diluted hydrocyanic acid, 1 fluid ounce, or 50 cubic centimeters; tincture of capsicum, 1/2 fluid ounce, or 25 cubic centimeters; tincture of Indian hemp, 2 fluid ounces, or 100 cubic centimeters; oil of peppermint, 14 fluid ounces, or 1.5 cubic centimeters; glycerin, 5 fluid ounces, or 250 cubic centimeters; alcohol (90 per cent), a sufficient quantity. Mix the chloroform, tincture of capsicum, tincture of Indian hemp, oil of peppermint, and glycerin, with 9 fluid ounces of the alcohol, and dissolve the morphine, hydrochloride in the mixture; add the diluted hydrocyanic acid; then mix

with enough of the alcohol to form 1 pint (or 1000 cubic centimeters) of the compound tincture. Dose, 5 to 15 minims. This preparation contains in a 10-minim dose, 3/4 minim of chloroform, 1/2 minim of diluted hydrocyanic acid, and 1/11 grain of morphine hydrochloride; that is more than 4 times the proportion of morphine hydrochloride present in the corresponding preparation of the *British Pharmacopoeia* of 1885"—(*Br. Pharm.*, 1898). (See also *Mistura Chloroformi et Cannabis Indicae Composita* (N. F.), which is also called *Chloroform Anodyne*.)

Extractum Papaveris.—Extract of Poppy.

Preparation.—"Take of poppy capsules, freed from the seeds, and in No. 20 powder, 1 pound (av.); rectified spirit, 2 ounces (Imp.); boiling distilled water, a sufficiency. Mix the poppy capsules with 2 pints of the water, and infuse for 24 hours, stirring frequently; then pack in a percolator, and, adding more of the water, allow the liquor slowly to pass until about a gallon has been collected, or until the residue is exhausted. Evaporate the liquor by a water-bath until it is reduced to a pint, and, when cold, add the spirit. Let the mixture stand for 24 hours, then separate the clear liquor by filtration, and evaporate this by a water-bath until the extract has acquired a suitable consistence for forming pills"—(*Br. Pharm.*). This preparation is seldom employed in America.

Medical Uses and Dosage.—(See [Papaveris Capsulae](#)). Dose, 2 to 5 grains.

DECOCTUM ANTHEMIDIS ET PAPAVERIS, B.P.C. DECOCTION OF CHAMOMILE AND POPPY.

Chamomile Flowers	10.00	2 ounces
Poppy Capsules, bruised	5.00	1 ounce
Distilled Water ...	to 100.00	to 20 fl. Ounces

Add the chamomile flowers and poppy capsules to 150 (30 fluid ounces) of the water, boil for ten minutes, strain, and make up to the required volume, if necessary, by passing distilled water through the strainer.

ACETUM OPII, B.P.C.- VINEGAR OF OPIUM. - a

Synonym.—Black Drop.

Opium, in fine powder	10.00	2 ounces
Nutmeg, in No. 30 powder	3.00	262 1/2 grains
Refilled Sugar	20.00	4 ounces
Diluted Acetic Acid ...	to 100.00	to 20 fl. ounces

Macerate the opium and nutmeg in 50 (10 fluid ounces) of the diluted acetic acid, for seven days, stirring frequently; then strain and express. Mix the residue with diluted acetic acid, 20 (4 fluid ounces), then strain and express again. Mix and filter the strained liquids, dissolve the sugar in the filtrate, and pass through the filter sufficient diluted acetic acid to make the product measure 100 (20 fluid ounces).

Dose.—3 to 6 decimils (0.3 to 0.6 milliliters) (5 to 10 minims).

Acetum Opii (U. S. P.)—Vinegar of Opium. - b

SYNONYM: *Black drop*.

Preparation.—"Powdered opium, 100 grammes (100 Gm.) [3 oz. av., 231 grs.]; nutmeg, in No. 30 powder, 30 grammes (30 Gm) [1 oz. av., 25.5 grs.]; sugar, 200 grammes (200 Gm.) [7 ozs. av., 24 grs.]; diluted acetic acid, a sufficient quantity to make 1000 cubic centimeters (1000 Cc.) [33 C, 391 fl.]. Macerate the opium and nutmeg in five hundred (500) cubic centimeters [16 fl. , 435 ml] of diluted acetic acid during 7 days, frequently stirring; then strain through muslin of close texture, and express the liquid. Mix the residue with two hundred (200) cubic centimeters [6 fl. , 366 ml] of diluted acetic acid to a uniform magma, and strain and express again. Mix and filter the strained liquids, dissolve the sugar in the filtrate, and pass enough diluted acetic acid through the filter to make the product measure one thousand (1000) cubic centimeters [33 fl. , 391 ml]"—U. S. P.).

Assay.—"To assay this preparation, transfer 100 Cc. of it to a small capsule, add 4 Gm. of precipitated calcium carbonate, or such a quantity as will be sufficient to neutralize the free acid, and then proceed further as directed under Tinctura Opii. It should yield from 1.3 to 1.5 Gm. of crystallized morphine"—(U. S. P.).

Description and Dosage.—This preparation, unfortunately known as *black drop*, now contains 10 per cent of opium, the latter containing from 13 to 15 per cent of crystallizable morphine. It is a dark-brown-red liquid, almost free from the disagreeable taste and odor of tincture of opium and less liable to nauseate the patient. The name *black drop* should be discarded on account of its liability to confusion with [black draught](#). The dose is from 5 to 10 drops.

LINCTUS SEDATIVUS, B.P.C. SEDATIVE LINCTUS.

Synonym.—Linctus Morphinæ Acidus.

Solution of Morphine Hydrochloride	5.00	1 fl. ounce
Emulsion of Chloroform	5.00	1 fl. ounce
Lemon juice	25.00	5 fl. ounces

Glycerin to 100.00 | to 20 fl. ounces

Mix the liquids. This linctus contains about 1/32 grain of morphine hydrochloride in 1 fluid drachm.

Dose.—2 to 4 mls (1/2 to 1 fluid drachm).

LIQUOR OPII SEDATIVUS, B.P.C. SEDATIVE SOLUTION OF OPIUM.

Opium, in small pieces	10.00	2 ounces
Calcium Hydroxide	1.50	131 grains
Alcohol	20.00	4 fl. ounces
Sherry	15.00	3 fl. ounces
Distilled Water, a sufficient quantity		
Alcohol (60 per cent.)	to 100.00	to 20 fl. ounces

Boil the opium and calcium hydroxide with 75 (15 fluid ounces) of the water for half an hour; then cool, strain, press the marc, mix the liquids, make up to 65 (13 fluid ounces) with distilled water, and add the alcohol and sherry. Set aside for some time, then filter, and add sufficient alcohol (60 per cent.) to make up to the required volume. The flavour and aroma of this preparation are much improved by keeping for some time before use, a period of six months having been recommended for maturing the solution. It is prescribed by many practitioners in preference to Extractum Opii Liquidum and Tinctura Opii for internal use, but has the same action.

Dose.—3 to 10 decimils (5 to 15 minims), for repeated administration; for a single administration 1 to 2 mls (15 to 30 minims).

EXTRACTUM PAPAVERIS LIQUIDUM, B.P.C. LIQUID EXTRACT OF POPPY.

Poppy Capsules, freed from seeds, in No. 20 powder	45.00	9 ounces
Alcohol	25.00	5 fl. ounces
Distilled Water, boiling, a sufficient quantity.		

Digest the poppy capsules in 100 (20 fluid ounces) of the boiling water for twenty-four hours, stirring frequently; then transfer to a percolator, and exhaust by percolation with more boiling distilled water. Evaporate the liquid on a water-bath to 75 (15 fluid ounces); when cold add the alcohol, allow to stand for twenty-four hours, filter, and make up to the required volume with distilled water.

Dose.—2 to 4 mls (30 to 60 minims).

LINCTUS OPIATUS, B.P.C. - OPIATE LINCTUS.

Liquid Extract of Opium 3.33 | 320 minims
Linctus of Squill to 100.00 | to 20 fl. ounces

Mix the liquids.

Dose.—2 to 4 mls (1/2 to 1 fluid drachm).

Pharmaceutical Notes.

By W. RANSTEAD JONES.

Editor Amer. Jour. Pharmacy:

Dear Sir:—I beg leave to submit the following to your consideration, for the benefit of the craft, for the extemporaneous preparation

Tinctura Opii Camphorata.

Take of Tinct. Opii, ℥iij ℥ijss.
Spts. Camphorae, ℥j ℥ij.
Ol. Anisi, ℥ij.
Acid. Benzoic., ℥ij.
Alcoholis, q. s. ft. Oij. Mix.
Mel. Despumat., ℥iv. troy.
Aquae, q. s. ft. Oij.

Mix the two solutions together, and filter through paper. Of course the tinctures are to be of the officinal strength. The actual relation of camphor and opium in this and the officinal recipe is as follows:

In my formula. Formula 1866, U. S. P.

Camphor,	grs. 82 1/2.	grs. 80.
Opium,	grs. 123 3/4.	Grs. 120.

The other ingredients are identical in quantity.

Tincture of Opium (Laudanum).

By MARIE O. GLOVER, A.M., S.B.

Having had occasion to collect and assay samples of tincture of opium from eight of the principal wholesale drug houses of New York, and an equal number of retail drug stores in Boston, it was thought that the results obtained might, perhaps, be interesting, as representing in some degree the strength of this preparation now in the market.

The change in the strength of opium preparations recently made in accordance with the U. S. Pharmacopoeia of 1880 would lead us to expect a greater variation than usual just at this time, although it might be supposed that samples made according to the old standard would bear upon the label some indication of the fact. This was, however, not found to be the case, as the only labels giving any information in regard to morphia strength were those from wholesale houses, which stated that the laudanum was made according to the U. S. P. 1880, or, in two instances, that it contained 6 grains to the fluidounce.

The method of assay employed was that of Flückiger, modified by E. R. Squibb ("Ephemeris," Vol. I, No. 1, p. 14; "Amer. Jour. Phar.," 1882, p. 244), and it was found necessary to introduce a slight modification of this process, in order to obtain clean, light-colored morphia.

The tincture was measured in every case at 15.6°C. (60°F.), 50 cc. being the amount used in each assay; the weight was also taken. It was then evaporated to 10 grams, 2.5 cc. of alcohol were added, and the mixture stirred, to obtain a uniform solution. This was in most cases impossible, therefore the mixture was poured gradually and with constant stirring into 100 cc. of alcohol, and the beaker covered and set aside until the supernatant fluid had become perfectly clear. The clear fluid was then decanted through a filter, the precipitate washed with alcohol, and the filtrate and washings evaporated until the alcohol was expelled, a little water being added. When the contents of the dish again weighed 10 grams, 2.5 cc. of alcohol were added, and a uniform solution was generally obtained. This was transferred to a small flask with as little additional water as possible, 2.5 cc. more alcohol added, and the flask well shaken. There were now 15 cc. of stronger ether added, the shaking repeated, and lastly 2 cc. of ammonia water (10 p. c. NH_3) were added, and the whole shaken until the crystals began to separate, the shaking after this being frequently repeated for half an hour. After standing overnight the ethereal stratum was carefully poured off on to a filter, 10 cc. more ether added, and the contents of the flask rinsed around without shaking. When the ethereal layer had separated, it was poured off through the filter, and the latter washed with 5 cc. of ether, carefully dropped on to the edges from a pipette, and allowed to dry. The remaining contents of the flask were poured on, the flask and filter washed, Using in all only about 10 cc. of wash water. The filter and contents were then dried at 100°C. (212°F.), weighed, the morphia removed, and the weight of the filter taken and subtracted. The result was then calculated to grains to a fluidounce.

The samples were treated as nearly as possible alike, the quantities of ether, alcohol and ammonia being the same, and the time allowed for precipitation about 24 hours in all cases. It was found impossible to assay most of them successfully without the alcoholic precipitation, the morphia obtained being dark-colored and impure, and in 3 out of 4 samples where comparative tests were made, less in amount, the gummy matter separated by the alcohol apparently hindering the precipitation.

The U. S. P. process, as given by Henry B. Parsons, in his interesting report, read before the New York State Pharmaceutical Association ("Weekly Drug News and Am. Pharmacist," June 23, 1883) was tried with 4 of the samples, the results being always lower, by a varying amount (from .2 to .8 grain to the fluidounce), than those obtained by the other process. It appears also that weighing the morphia on balanced filters, when the U. S. P. process is employed, gives a higher result than that obtained by subtracting the weight of the filter on removing the morphia. As the crystals are remarkably clean and easy to remove, the latter would seem to be the more correct method. The increase in weight may possibly be due to the formation of CaCO_3 to a greater extent in the pores of the inner filter, which is more exposed to the air during filtration.

The results obtained are as follows:

No. Per cent. of Morphia. Grains of Morphia to the Fluidounce.

1	1.20	5.24
2	1.20	5.25
3	0.91	3.95
4	0.59	2.62
5	0.66	2.89
6	1.40	6.06
7	0.86	3.81
8	1.24	5.46
9	0.77	3.32
10	0.98	4.29
11	1.10	4.77
12	0.65	2.87
13	0.75	3.29
14	1.24	5.45
[15	1.31	5.70]
16	1.27	5.59
17	1.33	5.87

The morphia from each sample was tested for its solubility in lime water ("Ephemeris," Vol. 1, No. 1, p. 18), and in Nos. 8, 10, 11 and 16, which showed a large amount of insoluble matter (the others containing traces merely), a correction was made for this, the amount being determined by collecting the insoluble substance (narcotine ?) from about 0.5 gram on a balanced filter, drying and weighing. The use here of the balanced filter cannot well be avoided, as the precipitate is of such a nature that it would not be possible to remove it, but it is open to the same objection as above, and the amount of impurity thus found is doubtless somewhat high. Before making the reduction the figures stood: No. 8, 5.63 grains, No. 10, 4.44 grains, No. 11, 4.89 grains, No. 16, 5.72 grains, to the fluidounce.

Nos. 1, 2, 6, 8, 14, 16 and 17 are all probably intended to answer the requirements of the U. S. P., 1880. A sample of laudanum (No. 15) made from 15 per cent. opium, according to the U. S. P., substituting 40 parts each of alcohol and water for 4 as directed, yielded, after making the subtraction for impurities insoluble in lime water, only 5.70 grains to the fluidounce, 6.03 being the amount obtained before correction.

Nos. 3, 7, 10 and 11 would fulfil the requirements of the U. S. P., 1870, according to which the minimum strength would be 3.75 grains to the fluidounce. Nos. 9 and 13 are perhaps intended to conform to this.

Nos. 4, 5 and 12 agree neither with the old strength nor with the new, but come within the limits (2-3 to 3-3 grains to the fluidounce) assigned by Mr. Parsons to laudanums probably made from moist opium.

Thus, of the 16 samples of tincture of opium we have 7 answering nearly or quite the requirements of the U. S. P., 1880, 4 meeting those of the U. S. P., 1870, 2 somewhat below this standard, and 3 containing such a small percentage of morphia that they are open to the suspicion of having been intentionally made of low morphia strength.

In every case, however, where the label contained the letters U. S. P., or the statement that the laudanum was made according to the U. S. P., 1880, it was found to contain between 5 and 6 grains of morphia to the fluidounce.

The number of samples is not large, and they were obtained only from New York and Boston, therefore it is hardly safe to draw general conclusions from the assays; but as these samples were received in June, 1883, at least seven months later than those assayed by Mr. Parsons, and after sufficient time had elapsed for the new standard to be adopted, it may, perhaps, not be quite useless to give the results.

Trochisci Glycyrrhizae Composita.—Compound Troches of Liquorice.

Preparation.—Take of ammonium chloride, in powder, 1 1/2 drachms; hydrochlorate of morphine, 6 grains; gum Arabic, sugar, extract of liquorice, each, in powder, 7 drachms; oil of sassafras, 30 minims; oil of stillingia, 20 minims; tincture of balsam of tolu, 3 fluid drachms. Mix the powders thoroughly together, then add the oils and tincture, and with water form them into a mass, to be divided into 180 troches.

Action, Medical Uses, and Dosage.—These troches are very valuable in *cough, irritation or tickling of the throat, laryngitis and bronchitis*, in which affections they are unrivaled. Each troche contains 1/20 grain of morphine hydrochlorate (J. King). (See also *Trochisci Ammonii Chloridi*, U. S. P.)

Trochisci Glycyrrhizae et Opii (U. S. P.)—Troches of Glycyrrhiza and Opium.

SYNONYM: *Opium lozenge*.

Preparation.—"Extract of glycyrrhiza, in fine powder, fifteen grammes (15 Gm.) [232 grs.]; powdered opium, one-half gramme (0.5 Gm.) [8 grs.]; acacia, in fine powder, twelve grammes (12 Gm.) [185 grs.]; sugar, in fine powder, twenty grammes (20 Gm.) [309 grs.]; oil of anise, two-tenths of a cubic centimeter (0.2 Cc.) [3]; water, a sufficient quantity to make 100 troches. Rub the powders together until they are thoroughly mixed; then add the oil of anise (equivalent to about 4 drops), and incorporate it with the mixture. Lastly, with water,

form a mass, to be divided into 100 troches "—(U. S. P.). About 1/2 grain of opium is contained in each troche. A similar troche, bearing same title as the official preparation, was very popular under the name of *Wistar's Cough Lozenge*. (The official troche is also known by this common name.) Wistar's cough lozenges are prepared as follows: Take of powdered opium, 1 drachm; powdered liquorice, 3 ounces; powdered gum Arabic, 2 1/2 ounces; powdered white sugar, 2 ounces. Triturate these thoroughly together, with oil of anise 20 minims, and finally add a sufficient quantity of water to form a mass of the proper consistence. Divide into troches of 5 or 6 grains each. Ten lozenges contain 1 grain of opium.

Action and Medical Uses.—These lozenges are a soothing and lenitive preparation for *catarrhs* and *tickling coughs*, in cases where opium is not contraindicated.

Varieties.

PILOCARPUS ([more](#)).—Dr. Sidney Thompson has for several years been treating erysipelas locally with the fluid extract of jaborandi, and usually in the following prescription:

Rx	Jaborandi fluid extract	24	Grams
	Glycerin	4	"
	Laudanum	4	"

M. Sig. Paint with a feather every four hours.

The glycerin is necessary, as the jaborandi has a tendency to produce a desquamation if used alone; the laudanum is added simply to relieve pain. *Therapeutic Gazette*, Nov., 1884, p. 504.

Dr. W. W. Claybaugh has used a similar mixture, increasing the laudanum and glycerin each to 12 grams, and reports favorable results in erysipelas, in inflammation caused by croton oil, and in severe scalding of the hand by a boiling liquid; in the latter case the inflammatory action was totally prevented.—*Med. and Surg. Rep.*, Feb. 7, 1885, p. 188.

Rhamnus Purshiana, De Candolle ([more](#)).—Limousin believes this bark, cascara sagrada, to contain chrysophanic acid, and derivatives of this compound, which cause the red color, on the addition of potassa to the resinous principles obtained by Professor Prescott (see "Amer. Jour. Phar.," 1879, p. 166), and induce the change of the yellowish color of the powdered bark when kept in an atmosphere containing ammoniacal vapors.—*Jour. Phar. Chim.*, Jan., 1885, p. 80.

USE OF OIL OF PEPPERMINT AND MENTHOL ([more](#)).—Dr. Brame states that oil of peppermint gives immediate relief of the pain in burns if applied after immersing the parts burned in water (*Lancet*). The itching of urticaria and mosquito bites is said to be much alleviated by the application of menthol.—*Cinc. Lanc. and Clinic*.

NEW ANESTHETIC COMPOUND.—An experimental and clinical study on a new method of producing anesthesia is the subject of a work, recently published, from the pen of M. Colombel. A combination of *atropine* ([more](#)) (two centigrams), *morphine* ([more](#)) (twenty centigrams), and *chloroform* (twenty grams), is the mixture recommended. Some of the

surgeons at Lyons speak very favorably of its use.—*Lancet*, Oct. 25, 1884; *Quarterly Ther. Review*.

OIL OF THYME ([more](#)).—Camperdon (*Bull. gén. de thérapeut.*) arrives at the following deductions:

1. In therapeutical doses (three to fifteen grains), oil of thyme causes mental excitement or stimulation; hence it is a valuable diffusible stimulant in depression following anemia, in conditions of collapses, etc.
2. It is an active diaphoretic and diuretic.
3. From its direct action upon mucous surfaces it is to be recommended in catarrhal affections of the respiratory and genito-urinary tracts.
4. It is a prompt hemostatic.
5. Thyme possesses powerful antiseptic properties, and is well adapted for use in surgery.
6. It is recommended that the internal administration of the drug be supplemented by its employment in the form of baths, fumigations and inhalations—*New York Medical Journal*.

Tinctura Ipecacuanhae et Opii (U. S. P.)—Tincture of Ipecac and Opium.

Preparation.—"Tincture of deodorized opium ([more](#)), one thousand cubic centimeters. (1000 Cc.) [33 fl $\frac{3}{4}$, 391 mL]; fluid extract of ipecac, one hundred cubic centimeters (100 Cc.) [3 fl $\frac{3}{4}$, 183 mL]; diluted alcohol, a sufficient quantity to make one thousand cubic centimeters (1000 Cc.) [33 fl $\frac{3}{4}$, 391 mL]. Evaporate the tincture of deodorized opium, in a tared capsule, on a water-bath, until it weighs eight hundred grammes (800 Gm.) [1 lb. av., 12 ozs., 96 grs.]. When it has become cold, add to it the fluid extract of ipecac, filter the mixture, and pass enough diluted alcohol through the filter to make the tincture measure one thousand cubic centimeters (1000 Cc.) [33 fl $\frac{3}{4}$, 391 mL]"—(U. S. P.). This tincture is intended to give a uniform preparation similar to the fluids known as "*Liquid Dover's powder*," or *Tincture of Dover's powder*.

Action, Medical Uses, and Dosage.—The uses of this preparation are those of [Dover's powder](#). Dose, 10 minims, which represent 1 grain each of opium and ipecacuanha.

On a Morphimetric Process for the Pharmacopoeia.

By WILLIAM PROCTER, JR.

The question, "What is the best process for assaying opium to determine its morphia strength, suited for adoption into the United States Pharmacopoeia?" was accepted by the writer at the Chicago meeting.

Reflection on the query suggests that it is not so much what is the best analytical process, as to decide what process is best suited for practical use by druggists and pharmacutists in determining the morphia value of opium for the purposes of the Pharmacopoeia. Those who take the view that the process should embody the nicest and most refined manipulations of the analytical laboratory, may not accept this view, but when it is understood that a large majority of the persons needing its use are not analytical chemists, it is believed that simplicity, united to a fair degree of accuracy, is more available than extreme accuracy, beyond the reach of most apothecaries, applied in a complex process.

So many able chemists have published processes, some of which are well known in connection with their names, as Staples' process, Mohr's, Guillermond's, &c., that the ground would appear to be well examined. The process of Staples is that of the United States Pharmacopoeia. Its point is in the employment of alcohol to retain the coloring matter in solution during the precipitation of the morphia, and in mixing the ammoniacal precipitant also with alcohol. The process of Mohr avails itself of the selective power of boiling limewater to reject narcotina, and retain morphia in solution. Both of these processes extract the opium with cold water. Guillermond's process employs alcohol of 71 per cent. to extract the opium, which is then precipitated by ammonia. The precipitate, as in Staples' process, contains narcotina.

One difficulty in extracting the portion of opium soluble in water is the caoutchoucoid matter which tends to resist its solvent action. The idea of employing benzine or light coal oil to remove this, as well as the free narcotina, has been suggested by Albert E. Ebert for another purpose, and has been used by Dr. Flückiger in his examination of opium. It is believed that, the preliminary use of this solvent in opium assays may be usefully adopted.

Believing that the best way to arrive at a solution of the query was to try several processes with the same solution of opium, a sample of nearly dry opium, weighing 300 grains, was triturated to coarse powder, and then rubbed with repeated portions of water, until finely divided and macerated in six times its weight of water for twelve hours, then percolated on a filter until the washings were nearly colorless. The united liquids (amounting to 4500 grains) were divided into three equal portions, each representing 100 grains of opium.

No. 1. The solution was evaporated with moderate heat to half a fluid ounce, mixed with an equal bulk of alcohol (sp. gr. 835), filtered through a small filter, and the latter washed with a little diluted alcohol. 50 minims of solution of ammonia (sp. gr. 960) was mixed with 2 fluid drachms of alcohol. One-half of this was added to the alcoholic solution of opium with agitation, and allowed to stand six hours, when the remainder of the ammonia was mixed in and the vessel permitted to rest for twenty-four hours. The crystalline matter deposited on the interior of the vial being detached, the contents were at intervals poured on a small-tared filter, and the crude morphia washed, first with diluted alcohol and then with water, dried at 120°, and weighed. The product was 9.75 grains. This was treated several times with boiling non-alcoholic ether, and the ethereal solution evaporated in a small-tared capsule gave 0.81

grains of crystalline prisms, equivalent to 0.31 per cent. of narcotina, and 9.44 per cent. of morphia in the opium examined.

No. 2. This portion was treated with solution of subacetate of lead till it ceased to be precipitated, the precipitate separated on a filter and well washed, the filtrate treated with diluted sulphuric acid by drops to separate the excess of lead as sulphate, and filtered. The clear solution by moderate heat is reduced to half a fluid ounce, mixed with its bulk of alcohol filtered, and the filtrate mixed with fifty grains of solution of ammonia containing alcohol, in two portions added half an hour apart, and allowed to stand twenty-four hours. The morphia was deposited in large distinct crystals, very few of which were attached to the interior of the vessel. They were collected on a filter, washed with diluted alcohol and water, dried and weighed 8.75 grains. This, repeatedly boiled in ether and the ethereal liquids evaporated, afforded but a trace of crystalline matter, too small to weigh and yet distinctly visible in minute prisms.

No. 3. This was mixed with sixty grains of lime, previously hydrated and boiled for fifteen minutes, the decoction filtered hot from the dregs, and these well washed with hot water. The filtrate slightly acidulated with muriatic acid was evaporated to half a fluid ounce, mixed with its bulk of alcohol and filtered; an excess of alcoholic ammonia was added and mixed, and the vessel set aside for twenty-four hours. The colored crystalline powder and the portion attached as a crust to the interior, were carefully collected on a filter, washed, dried and weighed, affording ten grains of impure morphia, more colored than either of the other results.

The use of alcohol in this process is intended to retain the coloring matter yet did not succeed in producing a light-colored morphia.

The last result, according to Mohr, should contain no narcotina, yet when boiled to exhaustion in ether deprived of alcohol, the ethereal liquid afforded 0.75 grain of narcotina, making the result of morphia 9.25 per cent., and narcotina 0.75 per cent.

It will appear, by a comparison of these results, that the Staples process, whilst less complicated than either of the others, yields a purer product than the Mohr process, and a slightly larger yield of morphia; whilst the process No. 2, which is suggested by the writer, affords the purest and best crystallized morphia, but is more complicated than either of the others. Hence, it is the first, or Staples' process, that is to be preferred, modified by treating the powdered opium with warm benzine as a preliminary operation. The final success is greatly aided by conducting the evaporation of the liquor at a moderate temperature, which renders the product less contaminated with coloring matter. By reducing the bulk before precipitation to the extent noted above, the precipitation of the morphia is facilitated, whilst the crystals are equally light colored. By using benzine beforehand the extraction of the opium will be more thoroughly accomplished. —*Proc. Amer. Pharm. Assoc.*, 1870.