REPORT OF COMMITTEE ON UNOFFICIAL STANDARDS.

The following portion of the report of the Committee on Unofficial Standards relates to certain crude drugs and chemicals suggested for inclusion in the next revision of the National Formulary, and by order of the Council is published in the JOURNAL in order to afford opportunity for discussion before the standards proposed are finally adopted.

Manufacturers, importers, analysts, and others interested in any of the proposed standards, are requested to send their criticisms and comments to the chairman of the committee, Geo. M. Beringer, 501 Federal St., Camden, N. J.

FERRI PYROPHOSPHAS SOLUBILIS

Soluble Ferric Pyrophosphate

It should contain Ferric Pyrophosphate corresponding in amount to not less than 10 percent of iron (Fe=55.84). It should be kept in amber-colored, well-stoppered bottles, protected from light.

Soluble Ferric Pyrophosphate occurs in thin, apple-green transparent scales, without odor, and having an acidulous, slightly saline taste. The salt is permanent in dry air, when excluded from light, but when unprotected, soon becomes discolored.

Soluble Ferric Pyrophosphate is freely and completely soluble in water, insoluble in alcohol. An aqueous solution of the salt shows a slightly acid reaction with litmus.

Soluble Ferric Pyrophosphate when boiled with potassium hydroxide T. S., should produce a brownish-red precipitate without evolving ammonia.

Fuse 0.1 Gm. of the salt with 0.1 Gm. each of potassium nitrate and sodium carbonate, and boil the residue with 10 mils of distilled water and filter. The filtrate, after being rendered nearly, but not quite, neutral with dilute nitric acid, should yield a yellow precipitate upon the addition of silver nitrate T. S.

Boil 5 mils of an aqueous solution of the Salt (1 in 10) with an excess of potassium hydroxide T. S., until the iron is entirely precipitated and filter; on acidulating the filtrate with acetic acid and adding silver nitrate T. S. the precipitate produced is pure white and not yellow (*Orthophosphate.*)

Assay—Weigh accurately about 1 Gm. of Soluble Ferric Pyrophosphate, dissolve it in 25 mils of distilled water in a glass stoppered bottle, add 15 mils of hydrochloric acid and 2 Gm. of potassium iodide, securely stopper the bottle and keep it at a temperature of 40° C. for 30 minutes. When cooled and then titrated with tenth-normal sodium thiosulphate V. S., using starch T. S. as indicator, it should show not less than 10 percent of iron. Each mil of tenth-normal sodium thiosulphate V. S. used corresponds to 0.005584 Gm. of Iron (Fe).

Each gramme of Soluble Ferric Pyrophosphate, U. S. P., corresponds to at least 17.908 mils of tenth-normal sodium thiosulphate V. S.

Average dose.—0.25 Gm. (4 grains).

FICUS

Fig.

The partially dried fruit of *Ficus Carica* Linné (Fam. *Moraceae*).

Usually compressed, of irregular rounded shapes, 2.5 Cm. to 5 Cm. in diameter, fleshy, light brown to yellow, frequently with an efflorescence of sugar; apex with a small scaly orifice; base with a scar or short stalk; internally hollow, with numerous small, brownish-yellow, glossy and hard akenes; odor distinct, fruity; taste sweet, pleasant.

GALEGA

Galega. European Goats Rue.

The dried flowering tops of *Galega officinalis* Linné (Fam. *Leguminosae*).

Stem smooth, erect, branched, when entire 15 to 45 cm. long, commonly cut and broken; leaves oddly-pinnate with 6-8 pairs of leaflets; stipule lanceolate, sagitate on one side; leaflets bright green, smooth or slightly hairy, short petioled, lanceolate or ovate-lanceolate, obtuse, slightly mucronate, 2 to 5 cm. long, 2 to 6 mm. broad; flowers small, white

to violet, in axillary racemes. Odor indistinct; taste mucilaginous, slightly bitter and astringent; colors the saliva yellowish-green.

GERANIUM

Geranium. Cranesbill.

The dried rhizome of *Geranium maculatum* Linné (Fam. *Geraniaceae.*)

Of horizontal growth, cylindraceous, somewhat flattened and rather sharply tuberculated, 2.5 to 10 Cm. long and 3 to 15 Mm. in diameter; longitudinally wrinkled, dark brown; facture short, light reddish brown or purplish; bark thin; wood indistinct; central pith large; odor slight; taste strongly astringent.

Average dose.—1 Gm. (15 grains).

GOSSYPII CORTEX

Cotton Root Bark.

The recently-gathered dried bark of the root of one or more of the cultivated varieties of *Gossypium herbaceum* Linné, or *Gossypim barbadense* Linné, or *Gossypium arboreum* Linné (Fam. *Malvaceae*) without admixture of more than 5 percent of wood and other foreign material.

In flexible bands or quilled pieces, attaining a length of 30 cm. and a thickness of about 1 mm.; outer surface orange-brown, smooth, slightly wrinkled, with small circular lenticels, the outer corky layer frequently exfoliated and showing the more or less fissured and fibrous middle bark; inner surface light brown, longitudinally striate; fracture tough, fibrous, the inner bark readily separable into fibrous layers; odor slight; taste very slightly acrid.

Under the microscope, sections of Cotton Root Bark show an outer layer of cork composed of 4 to 6 layers of tabular thin-walled cells, yellowish-brown, non-lignified cells, a thin primary cortex, consisting of starch-bearing parenchyma and an occasional large secretion reservoir with yellowish-brown contents; inner bark with large groups of bast-fibers arranged in interrupted, successive, concentric circles, separated radially by medullary rays and tangentially by the leptome or sieve tissue; bast-fibers 0.300 to 1.000 mm. in length, 0.015 mm. in width, the walls being 0.005 mm. in thickness, strongly lignified and with very few pores, the ends being acute and markedly attenuate; medullary rays 1 to 6 cells wide, the cells usually filled with starch grains; in diameter, the latter from 0.003 to 0.020 mm.; occasional cells containing rosette aggregates of calcium oxalate 0.009 to 0.025 mm. in diameter.

Average dose.—2 Gm. (30 grains).

HAEMATOXYLON

Haematoxylon. Logwood

The heart-wood of *Haematoxylon campachianum* Linné (Fam. *Leguminosae*).

Usually in small chips, reddish-brown, the freshly cut surface dark yellowish-red, on transverse section the wood shows medullary rays which are four cells wide; odor faint, agreeable; taste sweetish, astringent.

Hematoxylon imparts to water containing a little acid a yellowish color, which is changed to purple or violet-red by alkalies.

When the surface has a greenish, metallic lustre, the wood has undergone fermentation and should be rejected.

HAMAMELIDIS FOLIA

Hamamelis Leaves. Witchhazel Leaves.

The dried leaves of *Hamamelis virginiana* Linné (Fam. *Hamamelidaceae*), collected in autumn before the flowering of the plants, without admixture of more than 10 percent of stems and other foreign matter.

Petiole 1 to 1.5 cm. in length; lamina, when entire broadly elliptical or rhomboid-ovate, usually inequilateral, mostly 8 to 12 cm. in length; apex usually acute, sometimes rounded or acuminate; base slightly heart-shaped and oblique; margins sinuate or sinuate-dentate; upper surfaces pale or brownish-green, occasionally dark brown, with a few stiff, straight hairs: lower surfaces lighter in color, somewhat hairy, midrib and veins prominent; odor slight; taste astringent, slightly aromatic and bitter.

Under the microscope, sections of Hamamelis leaves show upon the lower surface narrow elliptical stomata, 0.015 mm. in length and with 2 to 4 neighboring cells; from both surfaces, but especially from the under surface, arise stellate hairs composed of 4 to 12 cells united at the base, the individual cells being 0.020 to 0.075 mm. in length, either straight or more or less bent and with very thick walls and narrow lumina, the latter sometimes only apparent in the lower portion of the cells.

Transverse sections show, in addition to the epidermal layers, a palisade layer consisting of a single row of cells and a dorsal pneumatic tissue made up of 3 to 6 rows of strongly branching cells; large collateral fibro-vascular bundles occur in the mid-rib and petiole, the tracheae being narrow, mostly spiral and associated with numerous, narrow, strongly lignified and porous wood-fibers; around the phloem, occurs a nearly continuous circle of bast-fibers, possessing strongly lignified walls; calcium oxalate in monoclinic prisms, 0.010 to 0.035 mm. in diameter, either in the cells of the mesophyll or in crystal-fibers associated with the bast-fibers.

HELIANTHEMUM

Helianthemum

Rock-rose. Frost-weed.

The dried herbage of *Helianthemum Canadense* (Linné) Michaux (Fam. *Cistaceae*.)

Stems mostly less than 5 dm. long, branched above, terete, frequently reddish, canescent, the slender branches mostly erect; leaves very short-petioled, 1 to 3 cm. long, 4 to 8 mm. wide, oblong to oblanceolate, with entire, revolute margins, green and roughish on the upper surface, canescent underneath; flowers of two kinds, rarely present at the same time, early ones mostly solitary, pedicelled, 2 or 3 cm. broad, with bright yellow corolla, hairy calyx, about 30 stamens and a single 3-carpelled pistil, producing an ovoid capsule, about 7 mm. long; later flowers apetalous, clustered in the leaf-axils, nearly sessile, having but 4 stamens and producing a capsule about 4 mm. long; taste lightly aromatic, astringent and bitter.

IGNATIA.

Ignatia.

Saint Ignatius Bean. Ignatia amara.

The dried seed of *Strychnos Ignatii* Bergius (Fam. *Loganiaceae*), yielding, when assayed by the process given below, not less than 2.5 percent of the mixed alkaloids of Ignatia. Heavy, hard, angularly ovate with obtuse angles, about 20 to 30 mm. long, by 15 mm. broad and thick; externally grayish or reddish-black and nearly smooth; fracture granular and translucent in small fragments; a small irregular cavity in the center; nearly inodorous; taste intensely bitter.

The yield of ash does not exceed 4 percent.

Assay—To 15 Gm. of Ignatia, in No. 60 powder, contained in a 300 mils Erlenmeyer flask, add 150 mils of a mixture of ether two volumes and one volume of chloroform; stopper the flask, shake thoroughly and allow to stand for 10 minutes. Then add 15 mils of ammonia water and 15 mils of distilled water, stopper the flask tightly and shake it vigorously at frequent intervals during 12 hours. Allow the dregs to settle and decant 100 mils of the clear liquid (representing 10 Gm. of the drug). Filter the solution through a pledget of purified cotton into a separator and rinse the graduate with a little ether and pour this through the cotton. Completely extract the alkaloids from the solution by shaking it out repeatedly with successive portions of weak sulphuric acid, (1-20). Collect the acid washings in a second separator, add ammonia water until the solution is decidedly alkaline to litmus and completely extract the alkaloids by shaking out with successive portions of chloroform. Evaporate the combined chloroform washings to dryness, add 5 mils of ether to the residue and again evaporate it to dryness. Dissolve the residue in exactly 10 mils of tenth-normal sulphuric acid, V. S., aided by gently warming, if necessary, and titrate the excess of acid with fiftieth-normal potassium hydroxide V. S., using cochineal T. S. as indicator.

Each milliliter of tenth-normal sulphuric acid V. S. consumed, corresponds to 0.0364 of the total alkaloids of Ignatia.

KAOLINUM

Kaolin

A native hydrated aluminum silicate, powdered and freed from gritty particles by elutriation.

A soft, white or yellowish-white powder, or in lumps, having an earthy or clay-like taste; insoluble in water, and in cold dilute acids and solutions of the alkali hydroxides.

When moistened with water, Kaolin assumes a darker color and develops a marked clay-like odor.

If 1 Gm. of Kaolin be mixed with 10 mils of water and 5 mils of sulphuric acid, no efferescence should occur, and if the mixture be evaporated until the excess of water has been removed, and further heated until dense white fumes of sulphuric acid anhy-

dride appear, then cooled and 20 mils of water added and boiled for a few minutes and filtered, there should remain on the filter a gray insoluble residue of *impure silica.*

If to one-half of the above filtrate ammonia water be added, a gelatinous precipitate of *aluminum hydroxide,* insoluble in excess, should be obtained.

If to the remaining half of this filtrate, sodium hydroxide T. S. be added, it should yield a gelatinous precipitate which is almost or completely soluble in an excess of the reagent.

If 2 Gm. of Kaolin be rubbed in a mortar with 10 mils of water, the mixture should not acquire more than a slight reddish tint on the addition of 0.05 Gm. of sodium salicylate (absence of more than traces of *iron*).

If Kaolin be ignited at a red heat, it should leave not less than 85 percent of nonvolatile residue.

KRAMERIA

Krameria. Rhatany.

The dried root of *Krameria triandra* Ruiz and Pavon, known in commerce as Peruvian Rhatany, or of *Krameria Ixina* Linné, known in commerce as Savanilla Rhatany, or *Krameria argentea* Martius, known in commerce as Para or Brazilian Rhatany (Fam. *Leguminosae*), without admixture of more than 5 percent of stems and other foreign matter.

Peruvian Rhatany—It consists of a knotty, several to many-headed crown with numerous branching roots, the latter rarely attaining a length of 50 cm. and usually less than 1 cm. in thickness, cylindrical, somewhat tapering, flexuous or wavy and very flexible, externally light reddish-brown or brownish-red, more or less marked with dark scaly cork, especially in the upper portion, otherwise nearly smooth, somewhat longitudinally wrinkled and devoid of transverse fissures, fracture of bark slightly fibrous, of wood tough and splintery, the pinkish-brown bark less than one-third of the radius, the wood yellowish or pinkish-white and finely radiate; inodorous; wood nearly tasteless, bark astringent.

Savanilla Rhatany and Para Rhatany—Roots usually separate, less flexuous and tapering than those of Peruvian Rhatany, and usually not exceeding 12 mm. in thickness; externally purplish-brown or chocolate-brown and marked with numerous fissures; fracture less tough than that of Peruvian Rhatany, internally the bark and wood darker, the bark about two-fifths or more of the radius and more astringent than that of Peruvian Rhatany.

Powder—Reddish-brown; starch grains, single or 2- to 4-compound, the individual grains spherical, ellipsoidal, or plano-convex, and sometimes with a central, radial or star-like cleft, 0.003 to 0.035 mm. in diameter; bast-fibers more or less wavy in outline with very much attenuated ends and with non-lignified walls, tracheae with simple or bordered pores associated with numerous wood fibers which are narrow-spindle shaped and with thick, porous, slightly lignified walls; numerous cellular fragments with yellowish or reddish brown walls; calcium oxalate in monoclinic prisms, 0.010 to 0.100 mm. in length, few or frequently absent.

Macerate 2 Gm. of powdered Rhatany with 10 mils of alcohol, with occasional stirring for one hour and filter. The deep reddish colored filtrate obtained should yield a dark brownish-red precipitate and a deep orange-red filtrate upon the addition of an excess of alcoholic lead acetate T. S.; this latter filtrate should yield no precipitate upon the further addition of a drop or two of alcoholic lead acetate T. S., and should give an olive-brown solution having a purplish fluorescence upon the addition of a drop or two of ferric chloride T. S.

The yield of aqueous extract should be not less than 9 percent.

The yield of ash should not exceed 5 percent.

Average dose.—1 Gm. (15 grains).

LAPPA

Lappa. Burdock Root.

The dried root of *Arctium Lappa* Linné, or of other species of *Arctium* (Fam. *Compositae*), collected from plants of the first year's growth.

Nearly simple, fusiform, of variable length, 5 to 20 Mm. in diameter near the crown; frequently split or in broken pieces; externally grayish-brown, longitudinally wrinkled, the crown somewhat annulate, sometimes surmounted by a woolly tuft of leaf remains; fracture somewhat horny; a dark cambium separating the thick brownish

bark from the yellowish porous and radiate wood, centrally hollow or containing a white pith-like tissue; odor slight; taste mucilaginous, sweetish, and slightly bitter.

Average dose.—2 Gm. (30 grains).

LEPTANDRA

Leptandra. Culver's Root.

The dried rhizome and roots of *Veronica virginica* Linné (Fam. *Scrophulariaceae*) without admixture of more than 5 percent of stems and other foreign matter.

Rhizome usually of horizontal growth, nearly cylindrical, somewhat branched, 4 to 10 cm. in length and 4 to 13 mm. in diameter; branches readily separable from the main rhizome; externally grayish-brown to dark reddish-brown, annulate from circular scars of bud-scales, upper surface with short stem remnants; occasionally with buds, and numerous circular stem-scars; from the under and lateral portions arise numerous coarse roots; fracture very tough and woody; internally bark rather thin, dark brown and resinous, wood about the same thickness as the bark, light brown and porous, pith large, more or less hollow the color being similar to that of the bark; nearly odorless; taste very bitter and acrid.

Roots 1 to 10 cm. in length and 1 to 2 mm. in diameter; externally dark brown to purplish brown, smooth and faintly longitudinally wrinkled; fracture short; internally with a thick brownish-black bark and small light brown central cylinder.

Powder.—Dark brown and yellowish-white; odor strong, penetrating; consisting of numerous irregular fragments, many of them being colored pink or violet upon the addition of hydrated chloral T. S.; starch grains numerous, to some extent isolated but mostly in the parenchymatous cells, the individual grains being nearly spherical or more or less polygonal, and from 0.002 to 0.008 mm. in diameter; fragments of woody tissues with tracheae and wood-fibers; tracheae with spiral thickenings or with simple or bordered pores, wood-fibers with thick lignified walls, with simple pores or with bordered pores, resembling tracheids; fragments of parenchyma containing a light brown or brownish-black resin, the latter frequently closely coherent with the starch grains in the cells thus preventing the separation of the individual starch grains; in hydrated chloral T. S. mounts, occasional elongated cells with a lemon-yellow oily substance.

LUPULINUM

Lupulin.

The glandular trichomes separated from the strobiles of *Humulus Lupulus* Linne (Fam. *Moraceae*).

A granular powder, bright yellowish-brown having the characteristic odor and taste of hops; on aging, becoming darker in color, disagreeable and valerian-like in odor, when it is unfit for use. Lupulin should be kept in tightly-closed containers protected from light.

Under the microscope, the glandular trichomes are somewhat globular or ellipsoidal, 0.150 to 0.200 mm. in diameter, consisting of a single layer of secreting cells assuming the form of a shallow cup, from the inner surface of which the cuticle has been separated by the secreted yellowish-brown oleo-resin.

Not less than 60 per cent of Lupulin should be soluble in ether.

The yield of ash should not exceed 16 percent.

MANGANI ET SODII CITRAS

Maganese and Sodium Citrate

Soluble Manganese Citrate.

Manganous citrate made soluble by sodium citrate. It contains, when rendered anhydrous by drying at 120° C. to constant weight, from 49 to 51 percent of manganous citrate. [$Mn_3(C_6H_5O_7)_2$=542.87.]

Manganese and Sodium Citrate occurs as a yellowish or pinkish white powder, or as translucent scales; odorless; having a slightly bitter and astringent taste. Permanent in the air.

It is slowly soluble in about four parts of water, slightly more soluble in boiling water, nearly insoluble in alcohol.

An aqueous solution of the salt is neutral or slightly alkaline to litmus, but does not redden phenolphthalein T. S.

When strongly heated, the salt chars and finally leaves a residue which effervesces with acids and imparts an intensely yellow color to a non-luminous flame.

An aqueous solution of the salt (1-20) made alkaline with ammonia water yields on warming with ammonium sulphide T. S., a salmon colored precipitate.

Ten mils of the aqueous solution of the

salt (1-20), slightly acidulated with acetic acid and mixed with 2 mils of calcium chloride T. S., remains clear while cold, but yields a white crystalline precipitate when heated to boiling.

Ten mils of the aqueous solution of the salt (1-50) does not respond to the U. S. P. test for *heavy metals*.

Separate portions of 10 mils each of an aqueous solution (1-100) answer the following requirements: Acidulated with hydrochloric acid it is not more than slightly reddened by potassium sulphocyanate T. S. (*iron*); nor rendered turbid at once by barium chloride T. S. (*sulphate*); nor show more than an opalescence with silver nitrate T. S. when acidulated with nitric acid (*chloride*).

Mix about 0.5 gm. of the salt with 5 mils. of sulphuric acid in a porcelain dish previously rinsed with sulphuric acid, protect the mixture from dust, and heat it for 15 minutes on a waterbath. No color darker than yellow develops (*Tartrates or other readily carbonizable substances*).

Assay—Weigh accurately about 0.5 gm. of the salt, previously dried to contsant weight at 120° C., dissolve it in 100 mils of distilled water, add 50 mils of hydrogen dioxide solution, and 10 mils of ammonia water, and boil the mixture for several minutes. Collect the precipitate on a filter, wash it thoroughly with hot distilled water, dry and ignite to constant weight. The weight of the manganous-manganic oxide (Mn_3O_4) thus obtained, is not less than 20.65, nor more than 21.1 percent of the weight of the salt taken, corresponding to not less than 49, nor more than 51 percent of manganous citrate.

MANGANI HYPOPHOSPHIS.

Manganese Hypophosphite.

It should contain not less than 97 percent of hydrated manganese hypophosphate [$Mn(PH_2O_2)_2+H_2O=203.06$]. It should be kept in well-stoppered vials.

Manganese Hypophosphite is a pink, granular or crystalline powder, odorless, and nearly tasteless, permanent in the air.

It is freely soluble in water; insoluble in alcohol.

An aqueous solution of the salt (1 in 20) shows a neutral or acid reaction with litmus, and yields with ammonium sulphide T. S. a salmon-colored precipitate of manganese sulphide, soluble in acetic acid.

When strongly heated in a dry test-tube, the salt evolves spontaneously inflammable hydrogen phosphide and on complete ignition leaves a residue of manganous pyrophosphate.

When an aqueous solution of the salt (1 in 20) acidulated with hydrochloric acid is added drop by drop with agitation to an excess of mercuric chloride T. S., a white precipitate of mercurous chloride is formed, and, upon the further addition of the solution of Manganese Hypophosphite, the precipitate becomes gray from reduction to metallic mercury.

On adding about 0.5 gm. of the salt to 5 mils of acetic acid it should produce no effervescence (*carbonate*).

On boiling 0.25 gm. of the salt with 10 mils of potassium hydroxide T. S. it will produce a light salmon-colored precipitate which gradually acquires a brown color on exposure to the air. The filtrate from this mixture, after being slightly acidulated with hydrochloric acid and boiling for a minute and then rendered alkaline with ammonia water, should yield no precipitate upon the addition of magnesia mixture T. S. (*phosphate*).

Dissolve 1 gm. of the salt in 20 mils of diluted hydrochloric acid with the aid of heat and then add 1 mil of barium chloride T. S. Not more than a slight turbidity should be produced (*sulphate*).

Dissolve 0.5 gm. of Manganese Hypophosphite in 10 mils of hot distilled water, add 10 mils of solution of hydrogen dioxide and 10 mils of potassium hydroxide T. S., boil for a minute, then make slightly acid with acetic acid and again warm. Cool, filter, and to 10 mils of the filtrate add 1 mil of ammonium oxalate T. S. No turbidity should be produced within five minutes (*calcium*).

Pour 5 mils of an aqueous solution of the salt (1 in 30) into an evaporating dish containing 3 mils of nitric acid, dilute with about 10 mils of distilled water and evaporate to dryness on a water-bath. The residue should not respond to the U. S. P. test for *arsenic*.

Assay—Weigh accurately about 1 gm. of Manganese Hypophosphite, and dissolve it in 30 mils of boiling distilled water in a 250 mil graduated flask. Add 25 mils of solution of hydrogen dioxide and 15 mils of potassium hydroxide T. S. and heat for ten minutes on a water-bath with frequent agitation. Cool,

add distilled water to make the volume exactly 250 mils, mix well and filter through a dry filter. Evaporate 25 mils of the clear filtrate to dryness with 10 mils of nitric acid, dissolve the residue in 10 mils of distilled water, transfer it to a 100 mil flask with the aid of a few mils of distilled water, add a drop of phenolphthalein T. S. and sufficient potassium hydroxide T. S. (free from chloride) to produce a pink color, then add 50 mils of tenth-normal silver nitrate V. S. and proceed from this point as directed in the assay under *Sodii Phosphas,* U. S. P.

When calculated to the amount originally taken it should show not less than 97 percent of Manganese Hypophosphite.

Each milliliter of tenth-normal silver nitrate V. S. used, corresponds to 0.003384 gm. of hydrated Manganese Hypophosphite Mn $(PH_2O_2)_2+H_2O$.

Each gramme of Manganese Hypophosphite corresponds to at least 286.64 milliliters of tenth-normal silver nitrate V. S.

MASTICHE

Mastic

A concrete resinous exudation from *Pistacia Lentiscus* Linne (Fam. *Anacardiaceae*).

In subglobular, lenticular, elongated or pear-shaped tears, about 3 mm. in diameter, pale yellow or greenish-yellow, transparent, having a glass-like lustre, the surface sometimes very slightly dusty; brittle, becoming plastic when chewed; odor slight, balsamic; taste mild, terebinthinate.

Mastic is completely soluble in ether and almost completely soluble in alcohol. The acid number determined by the method of the U. S. P. should not be less than 65.

MELILOTUS

Melilot. Yellow Sweet Clover

The dried leaves and flowering tops of *Melilotus officinalis* (Linne) Lamarck (Fam. *Papilionaceae*).

Stems mostly less than 3 dm. long, slender, straight, mostly simple, often leafy below, terminating in long, slender racemes, the younger portions very finely pubescent; leaves glabrous or nearly so, petiolate, trifoliolate, stipulate, the stipules subulate, entire, the leaflets 1 to 3 cm. long, varying from narrowly oblong to oval or occasionally broader above the middle, rounded truncate or slightly notched at the summit, sharply serrate; racemes 1 dm. or less long, many flowered; the flowers yellow, 5 or 6 mm. long, calyx bell-shaped, the 5 nearly equal lobes shorter than the tube, corolla papilionaceous, the keel shorter than the other petals, which are about equal; legumes reflexed, about 4 mm. long, obovate, wrinkled, 1-seeded; odor strong, vanilla like; taste sweetish, peculiar, slightly pungent and bitter.

The yield of ash should not exceed 10 percent.

The most important agricultural fertilizer—sodium nitrate—has been obtained for a great many years from the nitrate beds in Chile. These beds are now almost exhausted, and for a time persons interested in agriculture felt considerable anxiety about the future supply of this fertilizer. It has long been known that the electric arc burning in a mixture of nitrogen and oxygen such as we find in the case of air, will cause the two gases to unite chemically. The heat of the arc, however, is so great as to cause the two gases to separate again. It was found later that if the distance between the carbons of the arc is increased and the arc drawn aside and attenuated by means of a magnet, the gases will not be separated after combination. This discovery was followed in several countries of Europe, notably Sweden, Norway, Italy, and others where there is good water power, by the establishment of great plants for the manufacture of commercial fertilizers from the air. It has doubtless occurred to many persons that this abstraction of nitrogen might ultimately render the air unfit for breathing. The worry on this account, however, may be dismissed when we learn that the air above each square mile of the earth's surface contains nearly 24 million tons of nitrogen.—*Ambition.*