

plied until the slough separates, when a healthy granulating surface is obtained. The excessive pain caused by the escharotic may be much alleviated by combining morphine and carbolic acid in the arsenical paste, or by the use of morphine hypodermatically until the escharotic action ceases.

An arsenical paste prepared as follows is sometimes used as a depilatory: quicklime, $\frac{3}{4}$ ss; yellow sulphide of arsenic, grs. xx; starch, $\frac{3}{4}$ ij. Sulphide of barium and oxide of zinc is a more efficient combination. Esmarch's caustic is composed of: Arsenious acid, one part; morphia sulph., one part; calomel, eight parts; and pulv. acaciae, forty-eight parts. Mix. Sprinkle thickly every day on a surface either raw or denuded of cuticle by a blister.

In addition to the above local uses of arsenic, the results achieved by its hypodermatic injection should be mentioned. Dr. Radcliffe was the first to employ this practice in cases of *local chorea* of the head and neck, and in *histrionic spasm*. In these affections Fowler's solution or Pearson's, in doses of two to ten minims, diluted with an equal measure of water, is thrown into the affected muscles daily, sometimes curing after some weeks of treatment. In obstinate cases of general chorea the subcutaneous injection of arsenic is now practiced, with good effects, a cure resulting more speedily than by the stomachal method of administration. Arsenic used by this method has proved to be the most effective remedy for *lympadenoma*.

Authorities referred to:

- GÄTHGENS, C. *Zur Kenntniss der Arsenwirkungen*. *Centralblatt f. d. med. Wis.*, 32, 1875, p. 529.
- GIES, DR. THOMAS. *Experimentelle Untersuchungen über den Einfluss des Arsens auf den Organismus*. *Archiv für experimentelle Path. und Pharm.*, vol. viii, p. 176.
- GROHE, FR., UND MOSLER, FR., PROFS. *Zur Kenntniss der Veränderungen innerer Organe bei acuter Arsenvergiftung*. *Virchow's Archiv*, Band xxxiv, p. 208.
- HEBRA, PROF. DR. *On Diseases of the Skin*. Syd. Society edition, 1868.
- HERMANN, PROF. DR. *Lehrbuch der experimentellen Toxicologie*, Berlin, 1874, p. 224. *Arsenverbindungen*.
- HOFFMAN, PROF. DR. *Arsenikvergiftung und Cholera*. *Virchow's Archiv*, vol. 1, p. 455.
- HUNT, THOMAS, MR. *On the Treatment of Chronic Diseases of the Skin*. *The Lancet*, vol. i, 1846.
- ISNARD, M. *Bulletin Général de Thérapeutique*, vol. lxxxiv, p. 80. *Ibid.*, vol. lxxii.
- JOHANNSON, NICOLAI. *Ueber die Einwirkung der arsenigen Säure auf Gährungsvergänge*. *Archiv für experiment. Pathol. und Pharmacol.*, vol. ii, p. 99.
- KOSSEL, ALBRECHT. *Zur Kenntniss der Arsenwirkungen in Prof. Gäthgens Labor. zu Rostock*. *Archiv f. exper. Pathol. u. Pharm.*, vol. v, p. 128.
- LESSER, A. *Archiv für path. Anatomie und Physiologie*, 1873, p. 398, and 1874, p. 603.
- LOLLIOT, M. *Bulletin Général de Thérapeutique*, vol. lxxv, p. 338.
- MARMÉ, W. *Vergleichende Versuche über die Wirkungen der arsenigen Säure und der Arsensäure*. Abstract in *Virchow und Hirsch*, vol. i, 1876.
- MARSDEN, DR. ALEXANDER. *A New and Successful Mode of treating Cancer*, London, 1869, p. 96.

- PONTELAND POISONING CASES. *The Lancet*, September 22, 1866, p. 337.
- ROUTH, DR. C. H. F. *Obstetrical Transactions*, vol. viii, p. 290.
- RINGER AND MURRELL. *Journal of Physiology*, vol. i, p. 217.
- SCOLOSUBOFF, DR. *Sur la localisation de l'arsenic dans les tissus à la suite de l'usage des Arsenicaux*. *Archives de Physiol. Norm. et Path.*, vol. v, p. 563.
- SKLAREK, DR. W. *Archiv für Anat. und Physiologie*, 1866, p. 41. *The Physiological Effects of Arsenious Acid*.
- SCHÄFER, F., UND BÖHM. *Ueber den Einfluss des Arsen auf die Wirkung ungeformtes Fermente*. *Virchow u. Hirsch*, vol. i, 1872.
- SHULZ, DR. H. *Weiterer Beitrag zur Theorie des Arsenwirkung*. *Archiv für experiment. Pathologie u. Pharmacol.*, vol. xiii, p. 256.
- UNTERBERGER, S. *Mitgetheilt von Prof. Böhm. Beiträge zur Kenntniss der physiologischen Wirkungen der Arsenigen Säure*. *Ibid.*, vol. ii, p. 89.
- VIRCHOW, R. *His Archiv*, vol. xlvii, p. 524. *Choleraähnlicher Befund bei Arsenikvergiftung*.

THE SIMPLE BITTERS.

Quassia.—*Quassi amer*, Fr.; *Quassienholz*, Ger. The wood of *Picræna excelsa* Lindley (*Quassia excelsa* Swartz; Nat. Ord. *Simarubaceæ*), U. S. P.

PREPARATIONS.—*Extractum Quassiae*. Extract of quassia. Dose, gr. j—gr. iij.

Tinctura Quassiae.—Tincture of quassia (10 parts to 100 of diluted alcohol). Dose, \mathfrak{m} v—3 j.

Extractum Quassiae Fluidum.—Fluid extract of quassia. Dose, \mathfrak{m} v—3 ss.

COMPOSITION.—Quassia-wood contains a crystallizable bitter principle, neutral, called *quassin*.

Gentiana.—*Gentian, gentiane*, Fr.; *Bitterwurzel*, Ger. The root of *Gentiana lutea* Linné (Nat. Ord. *Gentianaceæ*), U. S. P.

PREPARATIONS.—*Infusum Gentianæ Compositum*. (Not official.) Compound infusion of gentian. (Gentian, bitter orange-peel, coriander.) Dose, 3 j— $\frac{3}{4}$ j.

Tinctura Gentianæ Composita.—Compound tincture of gentian. (Gentian, bitter orange-peel, cardamom, alcohol.) Dose, 3 ss—3 ij.

Extractum Gentianæ Fluidum.—Fluid extract of gentian. Dose, 3 ss—3 ij.

Extractum Gentianæ.—Extract of gentian. Dose, gr. j—gr. v.

COMPOSITION.—Gentian contains a peculiar principle, *gentianine*, and an acid, *gentisic acid*.

Gentiana Catesbæi.—Blue gentian, American gentian. This indigenous remedy may be used as a substitute for the foreign gentian, and similar preparations to the official formula for gentian, as above, may be prepared from it.

UNOFFICIAL FORMULÆ.—*Mistura gentianæ alkalina*. Dilute hydrocyanic acid, \mathfrak{m} iij; bicarbonate of soda, grs. xv; compound infusion of gentian to oz. j.

Mistura Gentianæ et Sennæ.—Infusion of gentian, drachms vj;

infusion of senna, drachms iij; compound tincture of cardamoms, drachm j.

Calumba.—*Colombe (racine de)*, Fr.; *Ruhrwurzel*, Ger. The root of *Jateorrhiza calumba* Meiers (Nat. Ord. *Menispermaceæ*).

PREPARATIONS.—*Infusum Calumbæ*. (Not official.) Infusion of calumba ($\frac{3}{4}$ j—Oj). Dose, $\frac{3}{4}$ ss— $\frac{3}{4}$ ij.

Tinctura Calumbæ.—Tincture of calumba (10 parts to 100 of diluted alcohol). Dose, 3 ss—3 ij.

Extractum Calumbæ Fluidum.—Fluid extract of calumba. Dose, 3 ss—3 ij.

COMPOSITION.—A peculiar principle, *colombin*, *berberine*, and a peculiar acid, *colombic acid*.

Coptis.—*Goldthread*. The root of *Coptis trifolia*. There are no official preparations of coptis. It contains, in common with some other bitters, the alkaloid *berberine*, and probably also a peculiar bitter principle. It yields up its alkaloids and bitter principle to both water and alcohol, but more freely to the latter. The tincture and fluid extracts are, therefore, the best preparations.

Sabbatia.—*American centaury*. Herb of *Sabbatia angularis*. As there are no official preparations of sabbatia, a tincture and fluid extract made in accordance with the general instructions given in the United States Pharmacopœia may be used.

Cornus.—*Dogwood*. The bark of the root of *Cornus Florida* Linné (Nat. Ord. *Cornaceæ*).

PREPARATION.—*Extractum Cornus Fluidum*.—Fluid extract of dogwood. Dose, π x—3 j.

Decoctum Cornus Floridae.—(Not official.) Decoction of dogwood ($\frac{3}{4}$ j—Oj). Dose, $\frac{3}{4}$ ss— $\frac{3}{4}$ ij.

ANTAGONISTS AND INCOMPATIBLES.—Quassia and calumba can be administered with the salts of iron. The sulphate of iron, and the silver and lead salts, are incompatible with gentian. The infusion of coptis is not affected by the salts of iron, but is precipitated by the nitrate of silver and acetate of lead. Therapeutically, all those agents which promote waste or destructive metamorphosis are opposed to the action of the simple bitters.

SYNERGISTS.—Iron, the mineral acids, pepsin, bismuth, etc., are synergistic to the bitters, and under some circumstances the alkalies promote their therapeutic action.

PHYSIOLOGICAL ACTIONS.—The simple bitters increase secretion from the mucous membrane. In the mouth they promote the flow of saliva, and in the stomach they appear to stimulate the production of gastric juice, and also of gastric mucus. It follows that an increase of digestive capacity is one result of their administration. The increased appetite which is observed from the use of the bitters is probably due to two factors: the sense of bitterness which increases the

desire for food, and the improved digestive power which, enabling more food to be disposed of, postpones the sense of satiety. Furthermore, the bitters, by removing morbid states of the intestinal mucous membrane, favor assimilation. More food being taken and more thoroughly digested, it is obvious that the bitters promote constructive metamorphosis. The blood is indirectly enriched by them, and the tissues are consequently improved in their nutrition. The simple bitters are accordingly usually classed with *tonics*.

To these effects of the simple bitters as a group, it is necessary to add that the active constituents of some of them have been studied in detail. *Berberine*, which enters into the constitution of several, is possessed of some antiseptic and antiperiodic power, but is not active from the physiological point of view. *Quassin* has recently been studied by Dr. Campardou, and his observations published in a special memoir. There are, however, no new facts produced. Quassin, as might be supposed from its origin, acts after the manner of the bitter tonics; it increases the appetite, and promotes the digestive functions by stimulating the secretions of the gastro-intestinal mucous membrane, and the contractility of the muscular fiber of the intestine. In an overdose quassine causes the local and systemic symptoms of an irritant poison.

Although these remedies, used judiciously and for a short period, undoubtedly promote the constructive metamorphosis, yet their long-continued use will produce gastric catarrh, decrease the flow of healthy gastric juice, and impair digestion.

THERAPY.—An infusion of coptis has much reputation in New England as a remedy in *aphthæ*, *psoriasis of the mucous membrane*, *ulcers*, and *epithelioma*. Used as a gargle, it is serviceable in ulceration of the tonsils.

A few drops of the tincture of calumba, or a teaspoonful of the infusion, will sometimes greatly relieve the *vomiting of pregnancy*, and is also occasionally efficacious in *sea-sickness*. The simple bitters are especially indicated in *atonic dyspepsia*, and in *chronic gastric catarrh*. They are useful in this state of things: pain after food, slow digestion, constipation alternating with diarrhœa. Calumba is the mildest, and may be borne when quassia and gentian disagree. According to Wilson Fox, "calumba holds the chief place in point of therapeutic value as a remedy which can be safely employed when others of the class would be too irritating." When there are much relaxation and torpor, quassia is very useful as a stomachic tonic. Sometimes an extemporaneous cold infusion of quassia is used, made by filling overnight with cold water a quassia-cup—a goblet turned out of quassia-wood. When constipation exists in cases of atonic dyspepsia, good results are obtained by a combination of gentian with senna, as in the formula already given. The compound tincture of gentian is an ex-

cellent vehicle for the *administration of cod-liver oil*, and contributes to its digestion and assimilation.

The infusions of gentian, calumba, and quassia are usefully employed as vehicles for the administration of acids and alkalies in cases of acidity and deficient supply of gastric juice, under the rules given in the articles on acids and alkalies.

In *convalescence from acute diseases*, the simple bitters, especially gentian and calumba, are employed to promote the appetite and digestion, and thus to aid in the process of constructive metamorphosis.

In the *diarrhoea* which is due to relaxation of the mucous membrane, and is not dependent on inflammation, the tincture of calumba is often useful. The author has obtained good results from the use of tincture of calumba combined with opium in the treatment of an irritable state of the intestinal mucous membrane, indicated by these symptoms: Soon after taking food, the occurrence of pain referable to the small intestines, nausea, loose evacuations containing undigested aliments, and followed by weakness and depression. ℞ Tinct. calumbæ, ʒ xv; tinct. opii deodor., ʒ j. M. Sig.: A teaspoonful in a wineglassful of water before meals. Calumba is also serviceable in the relaxation of the bowels succeeding to acute affections of the intestinal mucous membrane.

The infusion of quassia is one of the most effective injections for the destruction of the *ascarides vermiculares* which infest the rectum. The stomach administration of simple bitters undoubtedly hinders the development of intestinal worms, probably by correcting a morbid state of the mucous membrane. In the treatment of intestinal parasites much good, therefore, is derived from the use of bitters, administered with the view of restoring normal digestion.

According to Wood, the remedy most effective to remove and "permanently cure a disposition to the *accumulation of flatus in the bowels* is an infusion made with half an ounce of calumba, half an ounce of ginger, a drachm of senna, and a pint of boiling water, and given in the dose of a wineglassful three times a day."

The bitters are used as remedies in *malarial fever*. Although they exercise but little influence over the course of intermittent and remittent fever, they are useful in the form of infusion as vehicles for the administration of more active drugs. In the convalescence from malarial fever, and in *chronic malarial poisoning*, they are more actively beneficial as agents promoting constructive metamorphosis. The dogwood, of all the bitters given in the above list, possesses the most positive antiperiodic qualities, and is considered by the physicians of Southern United States as next to quinine in efficiency. An excellent tonic combination of decided utility in chronic malarial disease is the following: Dogwood-bark, calumba, poplar (liriodendron), wild-cherry, of each six ounces; boneset (eupatorium) and cayenne pepper, of each

four ounces. Mixed and sifted. Of the mixture a teaspoonful in cold or warm water, three or four times a day. A useful tincture to serve the purpose of a tonic, and as a remedy in malarial affections, may be prepared from the above combination of bitter tonics.

AROMATIC BITTERS.

Serpentaria.—*Virginia snakeroot*. *Serpentaire de Virginie*, Fr.; *Schlangenwurz*, Ger. The rhizoma and rootlets of *Aristolochia serpentaria* and of *Aristolochia reticulata* Nuttall (Nat. Ord. *Aristolochiaceæ*), U. S. P.

PREPARATIONS.—*Infusum Serpentariæ*.—Infusion of serpentaria (ʒ ss—Oj). Dose, ʒ ss—ʒ j. (Not official.)

Tinctura Serpentariæ.—Tincture of serpentaria (ʒ iv—Oij). Dose, ʒ ss—ʒ ij.

Extractum Serpentariæ Fluidum.—Fluid extract of serpentaria. Dose, ʒ ss—ʒ ij.

COMPOSITION.—A volatile oil, resin, a bitter principle, etc.

Prunus Virginiana.—*Wild cherry*. The bark of *Prunus serotina*.

PREPARATIONS.—*Infusum Pruni Virginianæ*.—Infusion of wild-cherry (ʒ ss—Oj). Dose, ʒ ss—ʒ ij.

Extractum Pruni Virginianæ Fluidum.—Fluid extract of wild-cherry bark. Dose, ʒ ss—ʒ j.

Syrupus Pruni Virginianæ.—Sirup of wild-cherry. Dose, ʒ j—ʒ ij.

COMPOSITION.—Amygdalin and emulsin, which produce by their reaction hydrocyanic acid, tannic and gallic acids, etc.

Cascarilla.—*Cascarilla*. *Cascarille*, Fr.; *Cascarille Rinde*, Ger. The bark of *Croton Eleutheria* Bennett (Nat. Ord. *Euphorbiaceæ*).

PREPARATIONS.—*Infusum Cascarillæ*. (Not official.) Infusion of cascarilla (ʒ j—Oj). Dose, ʒ ss—ʒ j.

COMPOSITION.—A crystallizable principle, *cascarillin*, tannic acid, a volatile oil, etc.

Actions and Uses.—These remedies possess the quality called tonic; they invigorate digestion, and promote constructive metamorphosis. They differ from the simple bitters in containing aromatic constituents, and in being astringent to a greater or less degree, owing to the presence of tannic and gallic acids. They are indicated in the same kind of cases as, and under similar conditions to, the simple bitters; but they are supposed to have, in addition, some specific properties derived from their volatile and odorous constituents.

Serpentaria is occasionally used as a stimulating tonic in *typhoid* and *typho-malarial fevers*. It is more frequently prescribed as a stimulant expectorant in *capillary bronchitis*, and in *pneumonia* of low grade, when carbonate of ammonia is combined with it. Formerly it was used locally to the throat, as a gargle in *diphtheria*, and

given internally as a stimulant, but it is now very rarely employed in such cases.

Wild-cherry is an excellent *stomachic tonic*, and may well be used as a substitute for calumba in the class of cases to which the latter is considered specially applicable. It has long been held in great esteem in domestic practice, as a remedy in *catarrhal states of the bronchial mucous membrane*, and in *phthisis*. Owing to the prussic acid which its cold infusion contains—produced by the reaction between the amygdalin and emulsin—it exercises some influence over cough. That it has any special virtues in the treatment of phthisis is hardly to be credited. The sirup is much used as an ingredient in cough-mixtures.

Authorities referred to :

PORCHER, DR. FRANCIS PEYRE. *Resources of the Southern Fields and Forests*, Charleston, 1869.

HUSEMAN, DR. AUGUST UND THEODOR. *Die Pflanzenstoffe*.

FOX, DR. WILSON. *The Diseases of the Stomach*, 1872.

Eucalyptus.—Leaves of *Eucalyptus globulus* Labillardière (Nat. Ord. *Myrtaceæ*). U. S. P.

PREPARATIONS.—*Tinctura Eucalypti*. (Not official.) Tincture of eucalyptus. Dose, ʒ ss—ʒ ij.

Extractum Eucalypti Fluidum.—Fluid extract of eucalyptus. Dose, ʒ x—ʒ j.

Eucalyptol.—Dose, ʒ v—ʒ ss. Usually prescribed in capsules, but may be given in the form of emulsion.

COMPOSITION.—Eucalyptus contains a peculiar resin composed of three different resinous bodies, a volatile oil consisting of *eucalyptol*, *terpene*, and *cymol*, tannic acid, and a crystallizable fatty acid. Eucalyptol is the most important of the constituents.

ANTAGONISTS AND INCOMPATIBLES.—Alkalies, the mineral acids, the salts of iron, mercury, lead, zinc, etc., are chemically incompatible. All agents promoting waste, or the retrograde metamorphosis of tissue, are therapeutically incompatible.

SYNERGISTS.—The simple and aromatic bitters, hydrastis, cinchona, etc., camphor, turpentine, cubebs, copaiba, the essential oils and substances containing them, are synergistic to or promote the therapeutical actions of eucalyptus. Any of these remedies may, therefore, be prescribed in the same formula with eucalyptus.

PHYSIOLOGICAL ACTIONS.—Eucalyptus has a warm, aromatic, bitter, and camphoraceous taste, resembling somewhat the taste of cubebs. In the mouth it excites the flow of saliva, and leaves a hot, pungent, and rather disagreeable flavor. In the stomach it causes a sensation of warmth, and doubtless promotes the flow of gastric juice. The appetite and digestive power are increased under its use. Increased intestinal secretion, also, is one result of its administration, and hence

the alvine evacuations are rendered somewhat more copious and easy. In very large doses it causes a sense of weight and uneasiness at the epigastrium, odorous eructations and indigestion, followed by diarrhœa, the stools having the characteristic odor of *eucalyptol*. The essential oil is readily diffusible and enters the blood with facility, but what changes, if any, it induces in the blood are unknown. It increases the action of the heart, lowers the arterial tension, and induces a feverish state. The respiratory movements are accelerated. Wakefulness is caused by it in those of full health, and sleep in the weak and anæmic. The eucalyptol is eliminated by the skin, mucous membrane of the bronchial tubes, and by the kidneys, the secretions of these organs being increased by it, and they are impregnated with its odor. This is especially the case with the urine, which, after some days' administration, becomes most strongly odorous by the presence of eucalyptol.

The vapor of eucalyptus, inhaled in large quantity, produces analogous effects to the internal administration, besides the more decided effects on the bronchial mucous membrane.

Eucalyptus is a powerful diaphoretic.

THERAPY.—The decoction of the leaves is an efficient local application in the various forms of *stomatitis*, *angina* subacute and chronic, and *tonsillitis* after the subsidence of the acute stage.

Eucalyptus is one of the most useful of the so-called stomachics in *atonic dyspepsia*, *chronic gastric catarrh*, and *chronic intestinal catarrh*, but its use is contraindicated in inflammatory states. The form of vomiting and indigestion dependent on the presence of *sarcina* is relieved by this agent, which acts by destroying the vitality of this minute organism. That condition of the mucous membrane which favors the production of *intestinal parasites* is removed by eucalyptus. In the case of *ascarides vermiculares*, the remedy should be used by injection.

Like the bitters, eucalyptus may be used to promote constructive metamorphosis, but it possesses more decided stimulant effects than these agents, by virtue of the eucalyptol. In *convalescence from acute disease*, in *debility* arising from defective assimilation, and in *cachectic states* generally, it is a serviceable tonic and stimulant. When the action of the heart is weak, it may be strengthened by eucalyptus. To women at the change of life who suffer from *flatulence*, *palpitation of the heart*, and *sudden flushings of the face*, it affords great relief, and often permanently removes these symptoms.

Hysteria, *chorea*, *asthma*, and allied nervous states, when occurring in debilitated subjects, and *cerebral anæmia*, are benefited by eucalyptus. In asthma eucalyptus may be smoked in cigarettes with stramonium, belladonna, tobacco, etc. Its efficacy in the form of fumes is strongly stated by Maclean.

The most important uses of this agent occur in the treatment of

catarrhal affections of the broncho-pulmonary mucous membrane. It is not adapted to acute affections or to recent inflammation, but to chronic cases accompanied by free muco-purulent expectoration. The author is able to confirm the observations of Gubler in reference to the great utility of eucalyptus in *bronchorrhœa*. It is an interesting fact, and probably explanatory of its therapeutical action, that eucalyptol is in part eliminated by the bronchial mucous membranes. In the same way eucalyptus is effective in the treatment of *catarrhal states of the genito-urinary organs*. *Chronic desquamative nephritis, granular degeneration of the kidneys, pyelonephritis, and hydronephrosis*, are improved by its cautious administration, but it should not be forgotten that, used too freely, or for too great a length of time, it will cause irritation and congestion of the kidneys, in the same way that turpentine, copaiba, and cubeba do.

No remedy which the author has hitherto used has seemed to him so effective in *chronic catarrh of the bladder* as eucalyptus. The urine during its administration acquires a strong odor of eucalyptol, and to its local action on the mucous membrane is to be attributed the therapeutical effect.

Eucalyptus has been much praised as a remedy for *intermittent fever*. The evidence as to its utility is contradictory. As the result of his own observations, and after careful examination of the facts reported by others, the author concludes that eucalyptus is far inferior to quinine. It is certainly very serviceable in the *convalescence from intermittent and remittent fevers*, and in *chronic malarial poisoning* it has a high degree of utility. It can not take the place of quinine for the arrest of the paroxysms, or to prevent relapses at the septenary periods, but it is more useful than quinine to reconstruct the damages in the organs of assimilation caused by malarial infection.

Externally, the tincture and the distilled water of eucalyptus are used as disinfectant applications to *foul-smelling and ill-conditioned ulcers and wounds* (Gimbert). The water of eucalyptus is recommended by Gubler as a vehicle for agents used by the hypodermatic method. The toxic influence of eucalyptus on the lower forms of life—cryptogamic and infusorial organisms—is the ground of its application for these purposes. As respects solutions of alkaloids for hypodermatic use, the water of eucalyptus prevents the development of the *penicillium*, which grows rapidly and at the expense of the alkaloid in solutions prepared with simple distilled water.

Authorities referred to :

- BURDEL, DR. E. *Bulletin de Thérapeutique*, tome lxxxiv, p. 409, et *ibid.*, tome lxxxv, p. 529.
 COSTAU, M. *Gazette Hebdomadaire*, 1872, No. 25. *Bulletin de Thérapeutique*, tome lxxxiii, p. 237.
 GIMBERT, M. LE DR. *Bulletin de Thérapeutique*, tome lxxxii, p. 422.

- GUBLER, DR. A. *Bulletin de Thérapeutique*, tome lxxx, pp. 145, 193.
 KELLER, DR. *The British Medical Journal*, May 11, 1872.
 LORINSER, DR. *Wiener medicinische Wochenschrift*, 1869, xix, 43.
 MACLEAN, DR. M. C. *The Practitioner*, vol. vii, p. 268.
 SCHMIDT'S *Jahrbücher der gesammten Medicin*, vol. cxlviii, p. 11. *Ueber Eucalyptus Globulus*; nach F. W. Lorinser; C. Haller; Franz Seitz; L. A. Buchner; C. Paul; A. Gubler.
IBID. Vol. cl, p. 121. *Ueber den Nutzen des Eucalyptus gegen Wechselfieber.*

Hydrastis.—*The Root of Hydrastis Canadensis*. Yellow-root.

PREPARATIONS.—*Extractum Hydrastis Fluidum*. Fluid extract of hydrastis. Dose, ℥ v—℥ ss.

Tinctura Hydrastis.—Tincture of hydrastis. Dose, ℥ x—℥ j.

COMPOSITION.—Hydrastis contains a peculiar principle, *hydrastine* or *hydrastina*, which crystallizes in four-sided prisms, white or colorless when pure, and having but little taste. Hydrastine, the alkaloid, should not be confounded with the eclectic preparation, hydrastin, which is composed chiefly of berberine. Much of the peculiar virtues of hydrastis is probably due to the alkaloid *berberine*, which is contained in it in the proportion of about four per centum. Both of these alkaloids unite with acids to form salts.

ANTAGONISTS AND INCOMPATIBLES.—The alkalies, tannic and muriatic acids, are chemically incompatible with the preparations of hydrastis. Muriatic acid precipitates *berberine*, and the so-called hydrastine of the eclectic practitioners is nothing more than berberine muriate. In prescribing the tincture and fluid extract of hydrastis with other bitters, only those free from tannin should be combined in the same prescription.

SYNERGISTS.—The vegetable tonics in general are synergistic to hydrastis, especially *berberis vulgaris* and *calumba*, both of which contain berberine.

PHYSIOLOGICAL ACTIONS.—The preparations of hydrastis have a decidedly bitter taste, and, like other bitters, promote the flow of saliva, and probably, also, of gastric juice. Increased appetite and digestive power result from its administration. It is, therefore, a *stomachic tonic*. It also increases secretion of the intestinal mucous membrane—its glandular appendages—and, there are good reasons for believing, promotes the flow of bile. As a result of this increase of secretion, the stools become softer and more frequent under its use, and it has hence been styled a laxative. The bodily condition, or constructive metamorphosis, is promoted by its administration. On the nervous system, hydrastis, especially the alkaloid hydrastine, has effects somewhat like, but less than, those of quinine; but it appears to be devoid of toxic power.

THERAPY.—*Stomatitis*, both mercurial and aphthous, is much improved by local application of the fluid extract of hydrastis. When

this preparation causes much smarting, it may be diluted with water. *Follicular pharyngitis, chronic coryza, and even syphilitic affections of the mouth, throat, and nares,* may be much benefited or even cured by the same application. It is said that five to ten drops of the fluid extract, taken by the stomach, will act favorably in the removal of the very troublesome affections named above, but the author is unable to verify these observations.

Hydrastis is very useful as a *stomachic tonic*, and may take the place of calumba in the treatment of *atonic dyspepsia*. A few drops of the tincture or fluid extract (five to fifteen) taken before meals, daily, for some time, will often cure *chronic gastric catarrh*, and remove the distressing headache which frequently accompanies this disease. It is one of the best remedies for the *stomach catarrh of chronic alcoholism*, and is probably the best substitute, if given in sufficient doses, for the alcoholic stimulant when its habitual use is to be abandoned. *Catarrh of the duodenum* is in a similar manner relieved by hydrastis, but this agent has special utility in duodenal catarrh when accompanied by *catarrh of the gall-ducts and jaundice*. Its use should, in these affections, be continued for some time. When a catarrhal state of the cystic duct—often resulting from or aggravated by catarrh of the duodenum—leads to inspissation of the bile and crystallization of the cholesterin, decided benefit accrues from the use of the preparations of hydrastis.

When *constipation* is dependent on deficient secretion, and the stools are dry and hard, it may be overcome by this remedy, but torpor of the muscular layer of the intestine is not affected by it.

Chronic catarrh of the intestine, even when it has proceeded to ulceration, is sometimes remarkably benefited by hydrastis. When the stools are very frequent and there is much pain, it is advantageous to combine a little opium with it. In *fissure of the anus, hæmorrhage from the rectum, and ulceration of the rectal mucous membrane*, applications of fluid extract of hydrastis to the affected parts promote healing.

The alkaloid hydrastine may be used as a substitute for quinine in many of the conditions for which the latter is now so frequently prescribed, viz., to promote appetite and digestion, and to improve assimilation in cases of *debility, in convalescence from acute diseases, in the various cachexiæ, especially the paludal*.

As a remedy for *intermittents*, hydrastine ranks below quinine considerably. It should be given under the same regulations as those which govern the administration of quinine, to the physiological and therapeutical action of which it is closely allied. The hydrastine of the eclectics, which is really muriate of berberine, is also a remedy of value in intermittents. The fluid extract of hydrastis contains, of course, both alkaloids. In chronic malarial poisoning (paludal ca-

chexia), hydrastine and berberine may be given with ferruginous preparations, as quinine is so frequently employed. It exerts the same power, though less in degree, which quinine has over enlarged spleen of malarial origin.

The preparations of hydrastis are used with advantage in certain affections of the genito-urinary organs. In *chronic Bright's disease*, it appears to lessen the excretion of albumen. It diminishes the mucus in *catarrh of the bladder*. It is often the most efficacious remedy which we can employ in *gonorrhœa* after the acute stage has subsided, and in *glect*. Especially in the latter has the author witnessed excellent results from its employment. The local use of hydrastine, or of the fluid extract of hydrastis, should be conjoined with the internal administration. The author has seen no injection so frequently successful in gonorrhœa as hydrastine. ℞ Hydrastinæ, ʒj; mucil. acaciæ, ʒiv. M. A half-ounce as an injection. Better, probably, the fluid extract, diluted properly or in combination, may be used for the same purpose. It is also a useful medicine in the treatment of *spermatorrhœa, prostrorrhœa, or urethral leucorrhœa*, when locally applied.

Uterine and vaginal leucorrhœa, ulcerations, and erosions of the cervix uteri, are quickly improved by the topical application of the fluid extract of hydrastis, which may be used in an undiluted state.

Unhealthy and sloughing sores, chancroid, old ulcers of the leg, are improved in character by the local use of this remedy. To prevent septic decompositions in wounds or cavities communicating with the external air, it may be freely used by local application and injection. It has also been used, apparently with benefit, to the surface of *cancerous growths*; but the only influence it can have in this disease is to relieve fetor by preventing decomposition.

Authorities referred to :

PORCHER, Dr. F. PEYRE. *Resources of the Southern Fields and Forests*, Charleston, 1869, p. 15.

CINCHONA AND ITS PREPARATIONS.

Cinchona.—*Cinchona*. The bark of any species of *Cinchona* (Rubiaceæ) containing at least three per cent of its peculiar alkaloids. (U. S. P.)

Cinchona Flava.—Yellow cinchona (calisaya-bark). The bark of *Cinchona calisaya*. It should contain not less than two per cent of alkaloids which yield crystallizable salts.

Cinchona Rubra.—Red cinchona. The bark of *Cinchona succirubra*. It should contain not less than two per cent of alkaloids which yield crystallizable salts.

PREPARATIONS.—*Decoctum Cinchonæ Flavæ*. Decoction of yellow cinchona (ʒj—Oj). Dose, ʒss—ʒj or more.

Infusum Cinchonæ.—Infusion of cinchona (cinchona, yellow bark,