

but in overdoses will disorder the stomach. The volatile oil diffuses into the blood with facility. Increased action of the heart and of the arteries, a subjective sensation of warmth, diaphoresis, and diuresis, are produced by it.

The oil is eliminated by the kidneys chiefly, and imparts an odor of violets to the urine. It powerfully stimulates the renal functions, and in large doses causes strangury and bloody urine. It may set up a high degree of irritation of the kidneys, leading to suppression and uræmic intoxication. In common with the other remedies of this group, juniper excites the venereal appetite; in large doses may cause priapism, and in women promotes the menstrual flow.

The principal use of juniper is as a *diuretic*. It is contraindicated in acute affections of the kidneys. It is largely employed as a diuretic in *cardiac* and *renal dropsy*. The infusion is an excellent vehicle for the exhibition of saline diuretics in these affections. The oil of juniper acts similarly to, and is indicated under the same conditions as, turpentine in *chronic pyelitis*, *chronic cystitis*, *gleet*, *prostrorrhœa*, etc. Diuretic effects may be obtained by inhalation of the vapor of the oil. For this purpose a few drops may be put into hot water, and the vapor be inhaled.

The *empyreumatic oil of juniper* (oleum cadinum), obtained by destructive distillation from *Juniperus oxycedrus*, is a thick, black liquid, similar in appearance to and smelling like common tar. It is much employed as a local application in *chronic eczema*, *impetigo*, *ichthyosis*, *psoriasis*, *acne rosacea*, etc. It is usually combined with German soft-soap. ℞ Alcoholis, saponis mollis, ol. cadini, āā ʒj; ol. lavendulæ, ʒjss. M. ℞ Ol. juniperis empy. (ol. cadini), saponis mollis, āā ʒj; ol. lavend., ʒss. M. Sig.: *Ointment*. ℞ Ol. juniperis empy., ʒj—ʒj; sevi, ʒss; adipis, ʒj. M. Sig.: *Ointment*.

Erigeron.—Erigeron. The leaves and tops of *Erigeron heterophyllum*, and of *Erigeron Philadelphicum*. (Pharm. 70.)

Erigeron Canadense.—Canada erigeron.

Oleum Erigerontis Canadensis.—Oil of Canada erigeron. Dose, ℥ v—℥ x.

ACTIONS AND USES.—Erigeron possesses a diuretic property to a slight extent. Canada erigeron is the more active, and contains a much larger proportion of volatile oil. The actions and uses of the oil are the same as the oil of turpentine, but the latter is the more efficient remedy. The oil of Canada erigeron has a local reputation in Philadelphia as an *hæmostatic* agent. It is said to be effective in *menorrhagia*, and cases of *intestinal hæmorrhage* arrested by it have been reported. It is adapted only to the treatment of passive hæmorrhages, and is probably less curative than turpentine in these cases.

Buchu.—Buchu. The leaves of *Barosma betulina* and of other species of *Barosma* (Nat. Ord. *Rutaceæ*). (U. S. P.) *Feuilles de bucco*, Fr.; *Bukublätter*, Ger.

Infusum Buchu.—Infusion of buchu (ʒj—Oj). Dose, ʒ ss—ʒ ij. (Not official.)

Extractum Buchu Fluidum.—Fluid extract of buchu. Dose, ℥ x—ʒ j.

COMPOSITION.—Buchu contains a *volatile oil* in the proportion of about 1.5 per cent. This volatile oil consists of a crude oil and a camphor—barosma camphor. The latter has a nearly pure peppermint odor. The existence of *barosmin*, so called, is doubtful.

Uva Ursi.—Uva ursi. The leaves of *Arctostaphylos uva ursi* Sprengel (Nat. Ord. *Ericaceæ*). (U. S. P.) *Feuilles de busserole*, Fr.; *Bärentraubenblätter*, Ger.

Decoctum Uvæ Ursi.—Infusion of uva ursi (ʒj—Oj). Dose, ʒ ss—ʒ ij. (Not official.)

Extractum Uvæ Ursi Fluidum.—Fluid extract of uva ursi. Dose, ʒ ss—ʒ ij.

COMPOSITION.—Uva ursi contains a bitter, neutral, crystallizable substance, *arbutin*; a very bitter amorphous principle, *ericolin*; and a tasteless, crystallizable, neutral principle, *ursonic*. It is rich in gallic and tannic acids.

Pareira.—Pareira brava. The root of *Chondodendron tomentosum* Ruiz et Pavon (Nat. Ord. *Menispermaceæ*). (U. S. P.) *Racine de pareira-brava*, Fr.; *Grieswurzel*, Ger.

Infusum Pareiræ.—Infusion of pareira brava (ʒj—Oj). Dose, ʒ ss—ʒ ij. (Not official.)

Extractum Pareiræ Fluidum.—Fluid extract of pareira. Dose, ʒ ss—ʒ ij.

COMPOSITION.—It contains a principle, *buxin*, but it is not known whether this is the active ingredient.

Chimaphila.—Pipsissewa. The leaves of *Chimaphila umbellata* Nuttall (Nat. Ord. *Ericaceæ*). (U. S. P.)

Decoctum Chimaphilæ.—Decoction of chimaphila. Dose, ʒ ss—ʒ ij. (Not official.)

Extractum Chimaphilæ Fluidum.—Fluid extract of chimaphila. Dose, ʒ ss—ʒ ij.

COMPOSITION.—Pipsissewa contains a crystallizable principle, *chimaphilin*, tannic acid, extractive matters, etc.

Scoparius.—Broom. The tops of *Sarothamnus scoparius* Koch (Nat. Ord. *Leguminosæ*). (U. S. P.) *Genêt à balais*, Fr.; *Pfriemenkraut*, Ger.

There are no preparations official in the United States Pharmacopœia. A decoction and fluid extract corresponding to those above mentioned may be employed.

COMPOSITION.—Scoparius contains an indifferent or somewhat acid crystallizable principle, *scoparin*, and an oily, colorless, liquid alkaloid, *sparteine*. The latter has very decided basic qualities, and agrees with conine and nicotine in being constituted without oxygen.

ACTIONS AND USES.—Buchu, uva ursi, pareira, pipsissewa, and scoparius, form a group of diuretics with properties in common. They are tonic, astringent diuretics. They promote appetite and digestion, and restrain intestinal movements, except pareira, which has rather a laxative action. Their active constituents diffuse into the blood and are eliminated by the kidneys. In passing over the genito-urinary tract these principles act topically upon the mucous membrane. As a rule they are actively diuretic; that is, they increase the amount of urinary water. Pipsissewa and scoparius are rather more actively diuretic than buchu and uva ursi, and hence are more useful in dropsy. By English physicians generally, and notably the late Dr. Pereira, scoparius is held in much esteem as a remedy for *dropsy*. It is adapted especially to the treatment of *cardiac dropsy*, and the general anasarca of *chronic parenchymatous nephritis*, but is inadmissible in acute affections of the kidney. Our indigenous remedy, pipsissewa, may be substituted for scoparius in the treatment of dropsy.

Buchu, uva ursi, and pareira, are more particularly useful in *chronic pyelitis*, *catarrh of the bladder*, *chronic gonorrhœa*, etc.; and of these the most efficient, probably, is buchu. The fluid extract is the most eligible form in which these remedies can be administered.

Carota.—Carrot-seed. The fruit of *Daucus carota*. The wild carrot. (Pharm. 70.)

The seeds of carrot have a hot, pungent, and bitter taste, due to a volatile oil which they contain, and to which their medicinal activity is due. As they impart their virtues to water, an infusion of the seeds is an eligible form in which to administer the remedy. Carrot-seeds act similarly to juniper, and produce diuresis, augment the menstrual flux, and cause aphrodisiac effects in the male.

Taraxacum.—Dandelion. The root, gathered in the autumn, of *Taraxacum dens-leonis* Desfontaines (Nat. Ord. *Compositæ*). (U. S. P.) *Pissenlit*, Fr.; *Löwenzahnwurzel*, Ger.

Extractum Taraxaci.—Extract of taraxacum. Dose, gr. v— \mathcal{D} j.

Infusum Taraxaci.—Infusion of taraxacum (\mathcal{Z} ij—Oj). Dose, \mathcal{Z} ss— \mathcal{Z} ij. (Not official.)

Extractum Taraxaci Fluidum.—Fluid extract of taraxacum. Dose, \mathcal{Z} j— \mathcal{Z} j.

COMPOSITION.—According to Kromayer, taraxacum contains *taraxacine*, an amorphous, intensely bitter principle, and a crystalline substance, *taraxacerine*. Nothing is definitely known as to the action of these substances.

ACTIONS AND USES.—Taraxacum possesses the properties of a simple bitter, in that it promotes the appetite and digestion. It has been long held, both popularly and professionally, to possess the power to promote the flow of bile. Recent investigations have demonstrated the inaccuracy of these opinions. It is a mild laxative, and as such, doubtless, may cause by reflex stimulation an emptying of the gall-bladder. It is a diuretic, although not a very active one. It is still prescribed as a laxative in *catarrhal jaundice*, in *ascites* from hepatic disease, and in *dyspepsia* and *indigestion* associated with torpor of the liver. By German physicians, muriate of ammonia and dandelion are frequently associated together in the treatment of the affections above named. Taraxacum is occasionally used as a diuretic in *dropsy*, but its utility is very limited.

The fluid extract of taraxacum is a good vehicle for the administration of such remedies as the muriate of ammonia and quinine, the taste of which it somewhat covers.

Scilla.—Squill. The bulb of *Urginea scilla* Steinheil (Nat. Ord. *Liliaceæ*). (U. S. P.) *Ognon marin*, Fr.; *Meerzwiebel*, Ger.

Acetum Scillæ.—Vinegar of squill (\mathcal{Z} iv—Oij). Dose, \mathfrak{m} xx— \mathcal{Z} j.

Syrupus Scillæ.—Sirup of squill. Dose, \mathcal{Z} ss— \mathcal{Z} j.

Syrupus Scillæ Compositus.—Compound sirup of squill. Hive-sirup. This preparation contains squill, senega, and tartar-emetice, the last named in the proportion of one grain to the ounce. Dose, \mathfrak{m} v— \mathcal{Z} j. This is a very active preparation, due chiefly to the tartar-emetice.

Extractum Scillæ Fluidum.—Fluid extract of squill. Dose, \mathfrak{m} j— \mathfrak{m} v.

Tinctura Scillæ.—Tincture of squill. Dose, \mathfrak{m} v— \mathcal{Z} ss.

COMPOSITION.—The important constituent of squill is an acrid, bitter principle, *scillitin*, or skulein—which has not yet been isolated. According to Schroff, scillitin is a glucoside, and the active principle is an acrid, non-volatile substance (Flückiger and Hanbury).

ACTIONS AND USES.—The taste of squill is bitter and somewhat acrid. It is an irritant to the mucous membrane, and excites nausea, vomiting, and purging, when introduced into the stomach in a sufficient dose. Very violent gastro-enteritis may be produced by its incautious administration in large doses. A state of hyperæmia or inflammation of the gastro-intestinal mucous membrane, therefore, contraindicates its use.

The active constituents of squill diffuse into the blood. Its systemic effects are produced by application to the external integument.

Paralysis and convulsions are induced in warm-blooded animals by toxic doses; and similar cerebral symptoms occur in man, in addition to the phenomena which usually attend the action of an irritant poison. In ordinary medicinal doses squill increases the bronchial mucus and facilitates expectoration. In toxic doses rapid breathing has usually occurred. It is highly probable that a portion of the active constituents of squill is eliminated by the broncho-pulmonary mucous membrane.

Squill stimulates the functions of the kidneys and increases the urinary discharge when used in medicinal doses, but in excessive quantity it excites violent inflammation, with strangury and bloody urine. Suppression of urine may be a result of its irritating action on the kidneys.

The use of squill is confined to its expectorant and diuretic effects. The *acetum* and *syrupus scillæ* enter into the composition of expectorant mixtures employed in the treatment of *catarrh of the bronchial tubes*, after the subsidence of acute symptoms, and the chronic forms of the disease. Squill is more particularly indicated when the sputa are tenacious, and are coughed up with difficulty. Ipecacuanha is advantageously combined with it in the more recent cases. \mathcal{R} Acet. scillæ, \mathfrak{z} ss; extract. ipecac. fluid., \mathfrak{z} ss; tinct. opii deod., \mathfrak{z} j; syrup. toltan., \mathfrak{z} x. M. Sig.: *A teaspoonful every two, three, or four hours.* \mathcal{R} Scillæ, ipecac., āā, gr. vj; ext. hyoscyami, gr. iij; morphinæ sulph., gr. ss—gr. j. M. Ft. pil. no. xij. Sig.: *One pill every four hours.* In chronic bronchitis with emphysema or dilated right cavities of the heart, squill is better associated with the stimulating expectorants, ammoniac, asafœtida, benzoin, etc. \mathcal{R} Syrup. scillæ, \mathfrak{z} ss; tinct. opii camphor., \mathfrak{z} ij; ammoniac, \mathfrak{z} ss; syrup. tolu., \mathfrak{z} x. M. Sig.: *A teaspoonful as necessary.* Squill is an improper remedy when there are present fever and an acute inflammatory condition of the air-passages.

Squill is a very effective diuretic. Since in overdoses it will produce great irritation of the kidneys, it is inadmissible in acute affections of these organs. In dropsy caused by any of the chronic diseases of the kidneys, squill must be used with caution. As a diuretic this remedy is more especially useful in *cardiac dropsy*. It may be combined with digitalis or the saline diuretics. \mathcal{R} Infus. digitalis, \mathfrak{z} ijss; acet. scillæ, \mathfrak{z} ss. M. Sig.: *A tablespoonful two or three times a day.* \mathcal{R} Digitalis, \mathfrak{z} j; scillæ, gr. x; ext. colchici acet., \mathfrak{z} j. M. Ft. pil. no. xx. Sig.: *One pill every four or six hours.* When anæmia is present, iron may be added to the above formula. \mathcal{R} Acet. scillæ, \mathfrak{z} ss; liq. potassii citratis, \mathfrak{z} ijss. M. Sig.: *A tablespoonful every four hours.*

Authorities referred to:

- FLÜCKIGER AND HANBURY. *Pharmacographia.*
HUSEMANN, DR. THEOD. *Handbuch*, zweiter Band, p. 1175.
KÖHLER, DR. HERMANN. *Handbuch*, p. 515.

Petroselinum.—Parsley-root. The root of *Petroselinum sativum*. (Pharm. 70.) (Not official.)

COMPOSITION.—The most important constituent of parsley is *apiol*, an oily, non-volatile, yellowish liquid, having a distinctive odor and an acrid taste. It contains, also, a gelatinous substance, *apiine* (pectin?), and a volatile oil.

ACTIONS AND USES.—Petroselinum has a hot, pungent taste, with an after acrid sensation. It is somewhat laxative—a property, doubtless, dependent on the irritation which it produces. It is stimulant in its effects on the circulation, and promotes the cutaneous and bronchial secretions. It is diuretic, by reason of the local irritant action of the principles which are eliminated by the kidneys.

Apiol has decided properties, and in its action strongly resembles quinine. It produces headache, tinnitus aurium, vertigo, intoxication, etc.

Petroselinum is rarely employed for its diuretic effects. Its use is indicated in *dropsy* under the same conditions as juniper, squill, and other stimulating diuretics. It may be given in the form of infusion (\mathfrak{z} j—Oj), one to three ounces at each dose.

Apiol is a remedy of considerable value in the treatment of *malarial diseases*, but it is inferior in every respect to quinine. Its use is only justifiable in the treatment of *intermittents*, and when the prejudices or idiosyncrasies of the patient forbid the use of quinine. Fifteen grains should be administered in one dose, or in divided doses, within an hour, in order to procure the maximum effect, and about four hours previous to the paroxysm.

The evidence is conclusive that *apiol* has decided *emmenagogue* power. It is a stimulant to the uterine system, and therefore is contraindicated in plethora of these organs, and should not be administered as an antiperiodic to pregnant women. It is indicated when a state of torpor of the ovaries and uterus exists. The *amenorrhœa* of anæmia, of functional inactivity, is the form of the malady in which *apiol* is serviceable. The condition of the blood should be corrected by iron, constipation should be removed by aloëtic purgatives, and the *apiol*, in a considerable dose (fifteen grains), should then be administered at the time of the menstrual molimen, or just preceding the time when the flow should begin. If the case has been obstinate, a daily dose of *apiol* may be given for a week, or at least for several days before the menstrual period. The neuralgic form of *dysmenorrhœa* is also benefited by this remedy. Other *neuralgiæ* are, it is said, relieved by *apiol*, but the existence of a malarial cause is, no doubt, the explanation of its curative action in such cases.

Authorities referred to:

- DELOUME, DR. *Gazette des Hôpitaux*, 1860, p. 511.
JORET AND HOMOLLE. *Bulletin Général de Thérapeutique*, vol. xlviii, p. 32.

MAROTTI, DR. *Ibid.*, 1863, p. 295.

STILLÉ, DR. A. *Therapeutics and Materia Medica*, vol. ii, p. 631.

Polygonum Hydropiperoides.—Water-pepper. This indigenous plant is not recognized by the United States Pharmacopœia. A fluid extract prepared according to the general directions of the United States Pharmacopœia may be prescribed in the dose of ℥ x to ʒ j. A solid extract is also to be found in the shops—dose, gr. j—gr. v.

ACTIONS AND USES.—The taste of hydropiper is hot, pungent, and acrid. The juice excites inflammation and vesication when applied to the external integument. In medicinal doses it causes a sensation of warmth in the stomach, and a "peculiar tingling sensation throughout the whole system" (Eberle). Unless given in an overdose it does not excite vomiting or produce purging. It stimulates the heart and arteries, increases the warmth of the surface, and promotes the cutaneous, bronchial, and renal secretions. It stimulates the menstrual flow, and is aphrodisiac.

This indigenous but little known remedy is a very efficient stimulating *diuretic* and *emmenagogue*. The author can confirm the statement of Eberle, who reports that "with no other remedy or mode of treatment has he been so successful as with this," in *amenorrhœa*. It is adapted to cases of *amenorrhœa* due to functional inactivity or torpor of the uterine system, and is contraindicated when a condition of plethora or congestion exists. The administration of this remedy should be begun about a week before the menses ought to appear. Thirty minims of the fluid extract should be administered four times a day. If *anæmia* exist, iron should be given; if constipation, aloes.

Hydropiper is a remedy of considerable power in *functional impotence*. When the erections are feeble, the seminal fluid watery, and the testes soft, good results will be obtained from the use of this remedy, provided no structural alterations hinder or prevent improvement.

When hydropiper is administered in these disorders of the sexual system, it causes a feeling of weight and tension, and dragging of the pelvic viscera. As it tends to increase the blood-supply to these organs, it is inadmissible when a state of congestion or inflammation exists.

Authorities referred to :

EBERLE, DR. JOHN. *A Treatise of the Materia Medica and Therapeutics*, fourth edition, vol. i, p. 441.

PORCHER, DR. F. PEYRE. *Resources of the Southern Fields and Forests*, p. 409.

Ruta.—Rue. The leaves of *Ruta graveolens* (Pharm. 70, not official).

COMPOSITION.—The medicinal activity of this plant depends on the presence of a *volatile oil*. Only the fresh leaves should be employed, and, as drying impairs the quality of the drug, the oil should be prescribed.

Oleum Rutæ.—Oil of rue. This is a volatile oil, of a greenish-yellow color, very disagreeable and characteristic odor, and pungent, acrid taste. Dose, ℥ j—℥ v.

ACTIONS AND USES.—In its local action rue is an irritant; applied to the skin, the oil causes heat, inflammation, and vesication. In ordinary medicinal doses a sensation of warmth follows its introduction into the stomach, and increased action of the heart and arterial system and a subjective feeling of peripheral heat are subsequently produced. The cutaneous, bronchial, and urinary excretions become more abundant, and the odor of the volatile oil is apparent in the breath, the sweat, and the urine. In toxic doses the oil of rue produces violent gastro-enteritis, prostration, convulsive muscular movements, hebetude of mind, etc., strangury and suppression of urine. In women the use of rue increases the menstrual flow, and large doses may cause abortion to take place. In men this agent promotes the sexual appetite, and increases the vigor of the erections.

A tincture of the oil of rue is an efficient carminative and antispasmodic remedy in the *flatulent colic* and *hysteria* of women. Almost the only use of rue at present is in the treatment of *amenorrhœa*. It is one of the most efficient *emmenagogues*. Plethora, congestion, or inflammation of the pelvic viscera, contraindicate its use. Functional inactivity of the ovaries and uterus is the condition which justifies the employment of rue. It has been recommended in *menorrhagia* when the vascular tonus is low, and in *uterine hæmorrhage* after miscarriage. It need hardly be remarked that the condition of pregnancy forbids the use of rue.

Sabina.—Savine. The tops of *Juniperus sabina* Linné (Nat. Ord. *Coniferae*). (U. S. P.) *Sabine*, Fr.; *Säbenkraut*, Ger.

COMPOSITION.—Savine contains an *essential oil*, in the proportion of two to two and a half per cent in the tops and about ten per cent in the berries. The oil of savine is isomeric with the oil of turpentine.

Oleum Sabinae.—Oil of savine. Dose, ℥ j—℥ v.

Extractum Sabinae Fluidum.—Fluid extract of savine. Dose, ℥ v—℥ xv.

ACTIONS AND USES.—Savine has a strong, disagreeable odor, and a pungent, acrid taste. Applied to the skin, the oil causes inflammation and vesication, if the contact be sufficiently prolonged. Introduced into the stomach in a full medicinal dose, a sensation of heat, eructations tasting of the oil, flatulence, and nausea, are produced. A toxic dose sets up a violent gastro-enteritis. The oil diffuses readily into the blood, and is excreted by various channels—the breath, the sweat, and the urine smelling strongly of it. Increased action of the heart and a rise of tension of the arterial system, followed by diminished tonus of the vessels, result from its administration in full medicinal

doses. The cutaneous, bronchial, and urinary excretions are rendered more abundant by savine. Strangury and bloody urine are caused by it in overdoses. The evidence is conclusive that savine exerts a powerful influence on the uterine system. It increases the menstrual flux, and in toxic doses may originate uterine action and cause abortion. The abortifacient effect can not be obtained unless by the administration of a quantity sufficient to endanger life.

The only use to which savine is now applied is in the treatment of *amenorrhœa*. It is generally conceded that the estimate of its powers made by Pereira is not extravagant, namely, that "it is the most certain and powerful emmenagogue of the whole materia medica." Savine is indicated in *amenorrhœa* dependent on deficient activity of the sexual system, accompanied by general atony. It is inadmissible when a tendency to congestion of the pelvic viscera is present, or in a condition of general plethora. Cases of *dysmenorrhœa* are benefited by savine when the subject is of relaxed habit, the menstrual flow being scanty, provided narrowing of the cervical canal is not the cause of the painful and difficult menstruation. *Menorrhagia*, when due to an enlarged, relaxed, and passively congested uterus, and *hæmorrhage after abortion*, may sometimes be arrested by this agent.

The most effective preparation of savine is the oil. This may be prescribed in gelatin-capsules, in an emulsion, or in pilular form. The fluid extract, if made from the fresh tops, is an excellent preparation. Combination with other remedies of the same group increases the action of savine. ℞ Ol. sabinæ, ʒj; ol. rutæ, ʒj; tinct. polygon. hydropiper, ʒj; ol. amygdal. express., mucil. acaciæ, aquæ menth. pip., āā ʒij. M. Sig.: *A teaspoonful twice or three times a day as an emmenagogue.*

Authorities referred to :

- ARAN, M. *Bulletin Général de Thérapeutique*, vol. xxx, p. 61.
 BEAU, M. LE DR. *Ibid.*, vol. xliii, p. 140.
 FLÜCKER AND HANBURY. *Pharmacographia*.
 HUSEMANN, DR. THEODOR. *Handbuch*, zweiter Band, p. 1200.
 KÖHLER, DR. HERMANN. *Handbuch*, p. 387.
 TAYLOR, DR. A. S. *On Poisons*, third edition, London, p. 494.
 VAN DE WARKER, DR. ELY. *The Detection of Criminal Abortion*, 1872.

Cantharis.—*Cantharides*. *Cantharis vesicatoria*. *Cantharide*, Fr.; *Spanische Fliegen*, Ger.

Tinctura Cantharidis.—Tincture of cantharides. Dose, ℥ ij—℥ xv. (The other preparations of cantharides, which are used externally only, will be taken up in Part III of this work.)

COMPOSITION.—The principal constituent of cantharides is a neutral, crystallizable principle, *cantharidin*. It contains also an oil, fatty matter, and an odorous material.

ANTAGONISTS AND INCOMPATIBLES.—There is no chemical or physio-

logical antagonist to cantharides. Poisoning by this substance should, therefore, be treated on general principles. The stomach should be evacuated by emetics or the stomach-pump; mucilaginous substances should be freely administered; the gastro-enteritis should be treated by opium, etc.

SYNERGISTS.—Oils and fats increase the solubility and favor the absorption of cantharidin. The physiological actions of this agent are promoted by the other members of this group.

PHYSIOLOGICAL ACTIONS.—The odor of cantharides is nauseating, fetid, and peculiar. In contact for a sufficient time with the skin or mucous membrane, it excites considerable burning, inflammation, and vesication. In the stomach it causes a sensation of heat, severe gastralgia, nausea, and vomiting. Notwithstanding the insolubility of cantharidin, it readily diffuses into the blood. It is actively stimulating to the circulatory system, and a rise of temperature, with thirst, follows in an hour or two. Under these circumstances, the urine becomes scanty and burns the passages; severe pain is experienced in the back and loins; priapism occurs; and the urine, voided with great difficulty, frequently contains albumen and blood. To this excitement of the circulatory system and of the genital organs succeeds a condition of depression, in which the pulse falls, the arterial tension is lowered, and the temperature declines (Radecki).

When a toxic dose is swallowed, in a short time a sense of constriction of the œsophagus, with difficulty of swallowing, and ptyalism, occur. Intense gastric pain, vomiting of glairy mucus streaked with blood, intestinal pain, abdominal tenderness, tenesmus, and mucous and bloody stools, are produced. Violent irritation of the genito-urinary organs is also experienced, manifested by lumbar pain, strangury and bloody urine, priapism, swelling and inflammation of the external genitals. In most cases of poisoning by cantharides, cerebral effects, consisting of muscular trembling, partial or general convulsions, coma, and insensibility are produced. Abortion has been caused by toxic doses of cantharides, and after death violent metro-peritonitis, gastro-enteritis, and general peritonitis, have been observed. It is questionable whether abortion can be caused by a dose less than toxic.

Cantharides has frequently caused dangerous symptoms, when used with a view to induce venereal excitement. That it does promote the sexual appetite is probably true, but this result is accomplished only by the use of a quantity sufficient to cause vascular turgescence of the sexual organs.

THERAPY.—In *acute desquamative nephritis*, after the subsidence of the acuter symptoms, good results are obtained from cantharides. The local condition in which this remedy is serviceable consists in hyperæmia with loss of vascular tonus. *Chronic pyelitis* and *chronic catarrh of the bladder* are occasionally remarkably benefited by the

long-continued use of small doses of cantharides. *Irritability of the bladder*, more especially as it occurs in women, without the existence of acute inflammation, and not produced by uterine displacements, is sometimes quickly and entirely relieved by this remedy. The irritable state of the bladder and the vesical tenesmus, which accompany chronic prostatic disease, are also sometimes surprisingly relieved by cantharides, but the author is unable to indicate the special circumstances to which it is adapted.

Gleet and *prostrorrhœa* are benefited by cantharides when these maladies occur in subjects of a relaxed fiber, with feeble circulation. Ringer makes the extraordinary statement that one drop of the tincture given three times a day will prevent *chordee*.

When *spermatorrhœa* actually exists, and is due to deficient tone of the seminal vesicles, the erections being feeble, and the sexual feeling torpid, good results are obtained by the use of cantharides. In cases of *scanty menstruation*, occurring in women of lax fiber, with cold hands and feet, improvement follows the use of this remedy. It sometimes happens that *menorrhagia* is due to relaxed vessels and a general lowering of the vascular tonus: under such circumstances cantharides may render important service. In these disorders of the sexual system, characterized by deficient power, the good effects of cantharides are promoted by the use of iron. The tincture of cantharides is the most eligible preparation for internal administration. In chronic affections of the genito-urinary passages the dose will range from five to fifteen drops, rarely the latter, three times a day.

Authorities referred to:

CASPER'S *Practisches Handbuch der gerichtlichen Medicin*, by Liman, zweiter Band, p. 576.

HUSEMANN, DR. THEOD. *Handbuch*, zweiter Band, p. 538, *et seq.*

RADECKI, FR. *Die Cantharidinvergiftung*. Inaug. Diss. *Schmidt's Jahrbücher*, vol. cxxxviii, p. 17.

RINGER, DR. SYDNEY. *Handbook of Therapeutics*.

TAYLOR, DR. A. S. *On Poisons*, fourth edition, London, p. 524.

PART III.

TOPICAL REMEDIES.

COUNTER-IRRITANTS.

EXTERNAL irritation, utilized for the relief or cure of internal maladies, is entitled *counter-irritation*. The remedies employed for this purpose are divisible into two groups:

1. Rubefacients;
2. Epispastics.

A *rubefacient* is a remedy which causes heat and redness; but, if the contact with the skin be sufficiently prolonged, vesication may be produced. An *epispastic* is a remedy which excites inflammation and vesication. The first group of remedies are restricted in their application to such therapeutical results as can be attained by a superficial and temporary action in the skin. The second group are intended for more permanent action and a deeper impression on internal organs. These remedies differ not only in the degree, but in the character of the effects produced. An impression on the periphery induces some kind of molecular modification at the center. According as the impression is slight or severe are the centric modifications localized to the point of reception or transferred to distant points (reflex impressions). According to the severity of the peripheral impression are the resulting local centric disturbance and the reflex changes (trophic alterations). Thus a slight peripheral rubefaction may cause a trivial centric vascular spasm, but an extensive burn on the body may induce vaso-motor paresis, and consequent inflammatory changes in remote organs.

RUBEFACIENTS.

Sinapis Alba.—White mustard. The seed of *Sinapis alba* Linné (Nat. Ord. *Cruciferae*). (U. S. P.)

Sinapis Nigra.—Black mustard. The seed of *Sinapis nigra*.

Charta Sinapis.—Mustard-paper.

COMPOSITION.—When water is added to pulverized black mustard, pungent, irritating fumes are given off. These fumes consist of the *volatile oil of mustard* (allyl sulphocyanide). This volatile oil is pro-