

tion into the eye (Seely). The author was given the opportunity, by the kindness of Dr. Seely, to examine the patient—the first instance in which such phenomena were observed—who experienced faintness and strange sensations in the head; but they were entirely subjective and mental, as no change in the circulation or respiration was to be seen. Since that case there have been several examples of the systemic action of duboisine after its instillation into the eye.

To relieve the *night-sweats* of phthisis and the various *neuroses of the respiratory organs*, and to *stimulate the action of the heart*, duboisine may take the place of atropine. As an antagonist to morphine it is equally as effective as atropine, but, as a hypnotic and anodyne, superior to the latter.

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B.—AGENTS EXCITING THE FUNCTIONAL ACTIVITY OF THE CEREBRUM.

To this group belong those remedies usually classed together under the designation of *antispasmodics*. They are to a slight degree cardiac stimulants; they increase the cutaneous circulation, and promote diaphoresis; they also stimulate the bronchial mucous membrane, and favor expectoration. As a result in part of the increased rapidity of the circulation, the functions of the brain become slightly more active, ideas flow more freely, irregular mental excitement and muscular hyperkinesis are moderated, and an orderly feeling of well-being is established. These effects are probably in part due to a direct action of these agents on the gray matter of the hemispheres, but our knowledge does not at present permit an exact statement of the nature of this impression. These agents do not in any quantity suspend the functions of the brain, and the temporary increase of activity which they produce is not followed by manifest depression.

Camphora.—Camphor. *Camphre*, Fr.; *Campher*, Ger. A stearopten derived from *Cinnamomum camphora* F. Nees et Ebermaier (Nat. Ord. *Lauraceæ*), and purified by sublimation. (U. S. P.)

Aqua Camphoræ.—Camphor-water. Dose, ʒj—ʒj.

Linimentum Camphoræ.—Camphor-liniment. (Camphor, 20 parts; cotton-seed oil, 80 parts.)

Linimentum Saponis.—Soap-liniment. (Soap, camphor, oil of rosemary, alcohol, and water.)

Spiritus Camphoræ.—Spirit of camphor. (Camphor, 10 parts; alcohol, 75 parts; water, 20 parts.) Dose, ʒv—ʒxx.

Camphora Monobromata.—Monobromated camphor. Dose, grs. ij—grs. x. Colorless, prismatic needles or scales, permanent in the air and unaffected by light, having a mild camphoraceous odor and taste, and a neutral reaction. Almost insoluble in water; freely soluble in alcohol, ether, chloroform, and fixed oils; slightly soluble in glycerin.

COMPOSITION AND PROPERTIES.—Camphor is found in colorless, translucent, crystalline masses. One part dissolves in about 1,300 parts of water, but it is freely soluble in alcohol, ethers, oils, chloroform, bisulphide of carbon, etc. Its odor is peculiar and characteristic. The formula for camphor is the following: $C_{10}H_{16}O$. By distillation with chloride of zinc it is converted into *cymol*, and by oxidizing agents into *camphoric* and *camphretic* acids.

ANTAGONISTS AND INCOMPATIBLES.—The addition of water precipitates camphor from its spirituous solution. Alkaline and earthy salts, for example sulphate of magnesium, separate from its solution the small quantity of camphor contained in aqua camphoræ. Coffee, the arterial sedatives, cold, and depressing causes generally, antagonize its physiological action.

SYNERGISTS.—All the remedies of this group, and alcohol, opium, and narcotic substances, increase the effects of camphor.

PHYSIOLOGICAL ACTIONS.—Applied to the skin, camphor produces redness, heat, and superficial inflammation, if the contact be sufficiently prolonged; to an open wound its effects are still more severe. Its taste is hot, aromatic, and pungent. In the stomach it causes a sensation of heat, and may excite in large doses inflammation and ulceration. The symptoms common to irritant poisons may, therefore, be produced by camphor. After experimental doses in animals camphor has been detected in the blood of the mesenteric and portal vein, but not in the chyle or urine. In moderate doses (medicinal) it increases the action of the heart, elevates the arterial tension, and promotes cutaneous transpiration; it also produces mental exhilaration, even a gay and lively intoxication, and allays pain. In toxic doses, in addition to the local irritant action on the gastro-intestinal mucous membrane, and the consequent systemic effects, it lowers the pulse, the skin becomes pale, and the surface cold and moist, stupefies, diminishes the reflex functions of the spinal cord, and causes convulsions, insensibility, and death; but these cerebral phenomena are not sepa-

rable from the reflex effects, on the nervous centers, of the violent gastro-intestinal disturbance. Sometimes dysuria has been caused by camphor, and, in small doses, owing doubtless to the merely stimulant effects on the circulation, it increases the sexual appetite; but, in large doses, it is antaphrodisiac.

Camphor, after absorption, is eliminated chiefly by the skin and bronchial mucous membrane, hence the breath and sweat of those using this substance smell of it strongly; but, when much camphor is taken in the solid form, it escapes with the fæces.

THERAPY.—Camphor enters into the composition of many *dentifrices*.

Camphor is contraindicated in all inflammatory affections of the gastro-intestinal mucous membrane. In *hysterical vomiting* a few drops of the spirit (two to five), every half-hour or hour, will often give relief. Camphor is an efficient remedy in *summer diarrhoea*. It is usually combined with opium: ℞ Spirit. camphoræ, tinct. opii, āā ʒ ss. M. Sig.: *Ten to thirty drops every two, three, or four hours.* ℞ Aqua camphoræ, ʒ iij; tinct. lavendulæ comp., ʒ j; tinct. opii, ʒ j — ʒ ij. M. Sig.: *A tablespoonful every hour or two.* This is an excellent formula, omitting the opium, for *flatulence*, especially *hysterical flatulence* and the *flatulent colic* which so often occurs during the climacteric period. For the *preliminary diarrhoea* of *Asiatic cholera* camphor is largely used, and with very obvious benefit. A drop or two of the saturated tincture (Rubini's), or five to ten drops of the spirit, may be given with a little laudanum every half-hour or hour. Oppolzer gave the ethereal tincture with opium: ℞ Camphoræ, ʒ j; etheris, ʒ vij; tinct. opii, ʒ j. M. Sig.: *Twenty to forty drops, as necessary.* Camphor, which is very serviceable in the *summer diarrhoea of children*, may be given to these little subjects in milk, in which it is soluble in the proportion of one drachm to four ounces.

Spirits of camphor, in the form of vapor, is a useful inhalation in the incipiency of *acute catarrh*. Dr. Beard speaks in very enthusiastic terms of a camphor preparation which he has called "cold powder." This formula is as follows: "Camphor, five parts. Dissolve in ether to the consistence of cream. Then add carbonate of ammonium four parts, opium-powder one part." The dose of this ranges from three to ten grains. Dr. Beard finds this combination of "great value in *breaking up colds*, when taken in time, and in modifying their force when taken late."

Camphor was formerly much used in the treatment of *asthma*, but, at present, more efficient remedies have taken its place. The monobromide of camphor has proved decidedly beneficial in *whooping-cough*. Five grains, suspended in mucilage and sirup of tolu, may be given to a child three or four times a day. It is most serviceable in the spasmodic stage, but will do good at any period.

Camphor will allay cough and promote expectoration, hence its utility in *chronic bronchitis*, in *capillary bronchitis* when stimulants are needed, and in *emphysema*. In the so-called *typhoid pneumonia* camphor is serviceable as a stimulant, in small and frequently-repeated doses, to sustain the powers of life during the period of defervescence.

In *typhus* and *typhoid fevers*, and in the *exanthemata* generally, camphor is used to accomplish two objects—to quiet delirium, subsultus, or restlessness, and to overcome the cardiac depression. When very active interference is unnecessary the following can be used: ℞ Aqua camphoræ, liq. ammoniæ acetatis, āā ʒ ij. M. Sig.: *A tablespoonful every two hours.*

Attacks of *nervousness* and *hysteria* are relieved by camphor-julep, i. e., camphor rubbed up with mucilage. Some cases of *delirium tremens* are benefited by camphor, but it is impossible to indicate the special condition requiring it. *Maniacal excitement*, *melancholia*, and *erotomania*, have also been relieved by this agent, but a great uncertainty exists as to the indications for its employment. Large doses are necessary in these affections, and they should at first be tentative, for it is not possible in the present state of our knowledge to predict the results of any given trial. On the whole, but little dependence is to be placed on camphor; besides, more certain and effective remedies are now available for the treatment of these maladies.

There appears to be a satisfactory clinical experience as respects the use of camphor to *allay sexual excitement*. Large doses (from ten to twenty grains) diminish the venereal appetite and the vigor of the erections; hence the use of camphor in *priapism*, *satyriasis*, *nymphomania*, *chordee*, etc. The following is a formula of Ricord: ℞ Camphoræ, lactucarii, āā ʒ j. M. Ft. pil. no. xxx. Sig.: *One or two pills, or more, as necessary.* For *nocturnal seminal losses*, with weakness and relaxation of the genitalia, the following formula is useful: ℞ Ergotine (aq. ex., Squibb's), ʒ ij; camphoræ, ʒ j. M. Ft. pil. no. xxx. Sig.: *Two at bed-hour.* A full dose of camphor will often arrest the *strangury* produced by blisters.

Considerable testimony has been collected showing the value of camphor as a remedy in *senile gangrene*, and in *hospital gangrene*. Five to fifteen grains every four hours may be given in an emulsion, and powdered camphor may be applied freely to the sloughing surface. A clyster of camphor is an effective remedy against *ascarides*.

Camphor was a favorite remedy with Dewees for *dysmenorrhœa*. He gave ten grains in a mixture with mucilage and cinnamon-water, and repeated the dose in an hour or two if necessary. For *after-pains*, camphor (ten grains), in a mixture with a little morphine (one eighth of a grain), is an effective remedy.

EXTERNAL USES.—A cataplasm of camphor, morphine, and flax-

seed, applied to the cheek, will relieve *toothache*. *Camphorated oil* is a mild counter-irritant, which is a useful external application for the relief of internal inflammations. The solution of camphor in ether has been applied locally with benefit in *erysipelas*. *Myalgia*, *lumbago*, and *neuralgia of superficial nerves*, may sometimes be relieved by frictions with camphorated oil or soap-liniment. Powdered camphor, freely sprinkled over the surface, is one of the means resorted to, and sometimes with success, to prevent *pitting of the face from variola*.

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Asafœtida.—*Asafœtida*. A gum-resin obtained from the root of *Ferula narthex* Boissier, and of *Ferula scorodosma* Bentham and Hooker (Nat. Ord. *Umbelliferae*, *Orthospermeæ*). (U. S. P.) *Asafœtida*, Fr. ; *Teufelsdreck*, Ger.

Emplastrum Asafœtidæ.—*Asafœtida-plaster*.

Mistura Asafœtidæ.—*Asafœtida-mixture*. Dose, $\frac{3}{4}$ ss— $\frac{3}{4}$ ij.

Tinctura Asafœtidæ.—*Tincture of asafœtida*. Dose, 3 ss—3 ij.

Pilule Asafœtidæ.—*Pills of asafœtida*. (*Asafœtida* and soap.) Dose, 1—4 pills.

Pilule Aloës et Asafœtidæ.—*Pills of aloes and asafœtida*. (*Asafœtida*, aloes, soap.) Dose, 1—4 pills.

Pilule Galbani Compositæ.—*Compound pills of galbanum*. (*Asafœtida*, galbanum, and myrrh.) Dose, 1—4 pills.

COMPOSITION.—About one half of the gross constituents of *asafœtida* consists of *resin*. This is not wholly soluble in chloroform or ether. It contains a peculiar acid (*ferulaic acid*). *Asafœtida* also contains a sulphureted and phosphureted *volatile oil*, in the proportion of from three to five per cent. This oil is at first neutral, but becomes acid by exposure to the air, and evolves sulphureted hydrogen. It possesses in a high degree the disagreeable odor of the drug.

Asafœtida also contains *malic acid*, and acetic, formic, and valerianic acids are products of the watery distillation. There is sufficient gum present also to form an emulsion with water.

ANTAGONISTS AND INCOMPATIBLES.—Acids, neutral salts, cold, and arterial sedatives, oppose the action of *asafœtida*.

SYNERGISTS.—The gum-resins, the balsams, and the aromatics, essential oils containing sulphur and phosphorus, and alcohol and ether, promote the physiological and therapeutical activity of *asafœtida*.

PHYSIOLOGICAL ACTIONS.—*Asafœtida* possesses an extremely characteristic odor, and a pungent, rather hot, and faintly acrid taste. It excites by its presence in the fauces an increased flow of saliva. It stimulates secretion from the gastro-intestinal mucous membrane, promotes the appetite, improves digestion, and increases peristalsis. The fæces are somewhat softer, and are very offensive from the presence in them of sulphur and phosphorus compounds, resulting from the decomposition of the essential oil. In large quantity *asafœtida* causes nausea, vomiting, and purging. The active principle (the essential oil) undoubtedly slowly diffuses into the blood, for the odor of it is detectable in the sweat and breath. Increased action of the heart, a higher temperature of the surface (subjectively, at least), more or less diaphoresis, and diuresis, have been observed to follow its medicinal administration. It acts as a gentle stimulant to the brain, induces a feeling of well-being, increases the flow of ideas, and causes, as the author has observed in one case, certainly, sufficient exhilaration of a pleasant kind to be regarded as an intoxicant.

Asafœtida is eliminated by the skin, intestinal and bronchial mucous membrane, and in small part by the kidneys. The functions of all these organs are increased in activity by the local stimulant effect. Partly due to the general rise of arterial pressure which it produces, partly to its local action in the process of elimination, and partly to its phosphorus compounds, *asafœtida* increases the menstrual flux, and, in both sexes, the venereal appetite.

THERAPY.—*Asafœtida* is used in the country of its habitat as a *condiment*. A little—very little—rubbed on the gridiron, improves the flavor of beefsteak. If it were not for its intolerable odor, and for the horrible eructations which follow its use, even when disguised in a sugar-coated pill, it would be much employed as a *stomachic tonic* in *atonic dyspepsia*, accompanied by torpor of the intestines. For the *flatulent colic of infants* no remedy is better than *mistura asafœtidæ*, which may be given in teaspoonful doses. It is especially in the *flatulence of hysteria and hypochondriasis* that this remedy is serviceable. It expels the flatus, promotes intestinal secretion and digestion, and relaxes the bowels. In this way the mind is relieved, but the action of *asafœtida* extends beyond this improvement in the state of the chylopoietic viscera—it induces a condition of mental cheerfulness which takes the place of the abnormal mobility of *hysteria*, and of the gloom of *hypochondriasis*.

The official pill of aloes and *asafœtida* is an excellent combination for the relief of *constipation*, when associated with *amenorrhœa*. It is adapted, of course, to those cases in which there is a condition of

anæmia rather than of plethora, and in which there exists a state of torpor of the ovaries, as well as of the intestinal canal. These conditions existing, the combined pill of aloes and asafœtida is indicated whether hysteria be present or not.

The *chronic scaly eruptions, chronic eczema, etc.*, especially when the skin is dry and harsh, are much improved by the persistent use of asafœtida.

Bronchorrhœa, bronchitis after the acute symptoms have subsided, the *cough maintained by habit* which may succeed the whooping-cough, and the *sympathetic cough of mothers* whose children are experiencing whooping-cough, are greatly benefited by asafœtida. ℞ Mist. asafœtidæ, ℥ iv; ammonii muriat., ʒ j. M. Sig.: *A tablespoonful as necessary.*

Asafœtida, which was formerly much prescribed in *asthma, whooping-cough*, and other neuroses of the respiratory organs, has been supplanted by more efficient remedies.

The disagreeable odor of asafœtida, which is a bar to its employment in many of the diseases to the treatment of which it is very well suited, is not an objection to its use in *hysteria, hypochondriasis, and epilepsy*. The moral effect of its repulsive odor is not without influence in the psychic realm. But the effect of asafœtida is not simply on the imagination of the patient; it has constituents of very positive quality, which impress the brain. Hence the utility of asafœtida to arrest the *hysterical paroxysm*, and to relieve the numerous maladies in which the hysterical constitution disports itself. The remarks already made in regard to the action of asafœtida on the digestive functions in hypochondriacal subjects, render it unnecessary to speak more at length on the use of this remedy in *hypochondriasis*. Asafœtida is no longer employed in the treatment of *epilepsy*, except in the so-called *hystero-epilepsy*. The *convulsions of childhood*, from reflex irritation, are sometimes relieved by this remedy, but it is entirely without utility in convulsions arising from renal or cerebral disease.

Ammoniacum.—Ammoniac. A gum-resin obtained from *Dorema Ammoniacum* Don (Nat. Ord. *Umbelliferae, Orthospermæ*) (U. S. P.). *Gomme ammoniacque*, Fr.; *Ammoniakgummi*, Ger.

Emplastrum Ammoniaci.—Ammoniac-plaster.

Emplastrum Ammoniaci cum Hydrargyro.—(Ammoniac, mercury, diluted acetic acid, and lead-plaster.)

Mistura Ammoniaci.—Ammoniac-mixture. (The resin is suspended by the gum in water.) Dose, ℥ ss—℥ j.

COMPOSITION.—Ammoniac contains a volatile oil, which differs from the asafœtida oil in not containing sulphur. It has the odor of the drug. Ammoniac also contains gum and resin, the latter in the proportion of about seventy per cent.

ANTAGONISTS, INCOMPATIBLES, and SYNERGISTS, same as for asafœtida.

PHYSIOLOGICAL ACTIONS.—The effects of ammoniac are similar to those of asafœtida, but it is much less active, owing to the fact, chiefly, that its volatile oil does not contain sulphur and phosphorus compounds.

THERAPY.—Ammoniac may be used for the same purposes as asafœtida, but it is much less efficient than the latter. At present its use is almost entirely restricted to *chronic bronchial affections*, in which the *mistura* is prescribed usually with the carbonate or chloride of ammonium. Ammoniac-plaster is sometimes used as a discutient to indolent glandular and inflammatory swellings.

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Valeriana.—Valerian. The rhizoma and rootlets of *Valeriana officinalis* Linné (Nat. Ord. *Valerianaceæ*). (U. S. P.) *Valériane*, Fr.; *Baldrianwurzel*, Ger.

Abstractum Valerianæ.—Abstract of valerian. Dose, gr. v—ʒ j.

Extractum Valerianæ Fluidum.—Fluid extract of valerian. Dose, ʒ ss—℥ ss.

Tinctura Valerianæ.—Tincture of valerian (20 parts to 100). Dose, ʒ ss—ʒ ij.

Tinctura Valerianæ Ammoniata.—Ammoniated tincture of valerian (20 parts to 100 spts. ammon. aromat.).

Ammonii Valerianas.—Valerianate of ammonia. Is a white salt, in the form of quadrangular plates, having the disagreeable odor of valerianic acid, and a sharp, sweetish taste. It deliquesces in a moist air, but effloresces in a dry one, and is very soluble in water and in alcohol. It is decomposed by potassa, with evolution of ammonia, and by the mineral acids with separation of valerianic acid, which rises to the surface in the form of oil.

Oleum Valerianæ.—Oil of valerian. Dose, ℥ ij—℥ iv.

COMPOSITION.—Valerian contains from one to two per cent of an *essential oil*, which, if distilled from the perfectly fresh plant, has but little odor. In the process of drying of the root, or on exposure to the air of the oil distilled from fresh roots, *valerianic acid* is formed. As obtained from the dried root, the oil of valerian consists of *valerianic acid, a camphor, valerene, and valerol.*

An acid strongly resembling valerianic is obtained by the oxida-

tion of amylic alcohol; but the two acids are not identical. The valerianic acid of pharmacy is, however, obtained in this way, and the various valerianates are products of the combination of the acid formed from amylic alcohol with bases.

ANTAGONISTS AND INCOMPATIBLES.—Quinine, digitalis, ergot, and remedies acting similarly, antagonize the actions of valerian.

SYNERGISTS.—All the agents of this group, opium, alcohol, ether, etc., increase the action of valerian.

PHYSIOLOGICAL ACTIONS.—Valerian and its preparations have a hot, pungent taste, and a peculiar and disagreeable odor. A sensation of warmth at the epigastrium follows when it is taken into the stomach. In large doses, nausea, hiccup, eructations of the drug, vomiting, and diarrhoea, may be produced. In small doses no appreciable physiological effects are observed; but in considerable doses the action of the heart is increased, the temperature of the surface rises, and diaphoresis occurs. As respects the nervous system, headache, vertigo, exhilaration of mind, spectral illusions, hallucinations, have, it is said, been produced by valerian; but these results are by no means constant phenomena. According to Von Grisar (Köhler), oil of valerian reduces the reflex excitability, motility, and sensibility, and antagonizes the tetanizing action of brucine.

The odorous principle—valerianic acid—appears in the sweat, breath, and also the urine.

THERAPY.—*The flatulence of the hysterical and hypochondriacal* is quickly relieved by the tincture or fluid extract of valerian.

It sometimes happens that a mild attack of *spasmodic asthma* may be relieved by valerian, but this by no means efficient remedy quickly loses its effect. *Whooping-cough, laryngismus stridulus,* and other *neuroses of the respiratory organs,* may be occasionally modified by this agent; but it is by no means equal to many other remedies now available.

The chief therapeutic use of valerian is in the treatment of *nervousness, hysteria, and hysterical disorders generally.* There can be no difference of opinion as to its great value in these cases; but as respects *epilepsy, chorea, paralysis agitans,* etc., in which it was formerly used, it must suffice to say that it is now never prescribed.

Under the impression that the physiological and therapeutical activity of valerian depends on valerianic acid, various valerianates have been introduced into practice. The only one which requires notice here is the *valerianate of ammonia,* which in the form of elixir is frequently prescribed in hysterical affections. Fluid extract of valerian has been used with advantage in *diabetes insipidus* and also in *saccharine diabetes,* but the results are not permanent. It diminishes the amount of urinary water in both, and lessens the excretion of sugar in the latter, but these effects continue only while the remedy is given.

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Cannabis Indica.—Indian cannabis. The flowering tops of the female plant of *Cannabis sativa* Linné (Nat. Ord. *Urticaceæ, Cannabineæ*), grown in the East Indies. (U. S. P.) *Chanvre Indien,* Fr.; *Hanfkrout,* Ger.

Cannabis Americana.—American hemp.

PREPARATIONS.—*Extractum Cannabis Indicæ.*—Extract of cannabis Indica. Dose, gr. $\frac{1}{4}$ —gr. ij or more.

Extractum Cannabis Indicæ Fluidum.—Extract of cannabis Indica. Dose, \mathfrak{m} ij—3 ss.

Tinctura Cannabis Indicæ.—Tincture of cannabis Indica. Dose, \mathfrak{m} v—3 j.

COMPOSITION.—The physiological activity of hemp is influenced largely by soil and climate; for, although in botanical characters Indian and American hemp are identical, the Indian hemp possesses decidedly more narcotic power. Indeed, until recently, it was supposed that American hemp was devoid of the peculiar properties possessed by the Indian; but it has been shown that American hemp does really have effects similar in kind to, but much less in degree than, those caused by the Indian.

The most important constituent of hemp is a peculiar *resin, cannabin,* which possesses the active powers of the plant. By distillation of the leaves and stems, a peculiar *volatile oil* is obtained; and this is divisible into *cannabene,* a very light hydrocarbon, and *hydride of cannabene,* a solid crystalline substance.

An impure resin, collected in an imperfect and crude way from the leaves and stems, is known as *charas,* or *churrus.* *Bhang* consists of the dried leaves and stalks made into a confection with preserved fruits and aromatics, and, in this form, constitutes the well-known *hashish.* *Gunjah* is the female flowering plant, dried, from which the resin has not been extracted.

No arbitrary rules for the dose can be laid down. In beginning the use of any newly-made preparation, it is safer to commence with the minimum dose. Having, by gradually increasing the quantity, ascertained the physiological activity of that particular specimen, it may then be pushed according to the necessities of the case.

ANTAGONISTS AND INCOMPATIBLES.—The caustic alkalies, the acids, strychnine, and induction electricity, oppose the actions of hemp. In cases of poisoning, the stomach should be evacuated, and symptoms be combated as they arise. Strychnine may be injected hypodermatical-