

sation is destroyed by it as well as motility. Death is due to asphyxia—to paralysis of the muscles of respiration. Notwithstanding the activity of nitro-glycerin, the most serious symptoms are recovered from without detriment. Thus Dr. Murrell narrates several cases in which unconsciousness was produced without any ill results, except some temporary headache.

THERAPY.—Nitro-glycerin is adapted to the treatment of the maladies in which its congener, amyl nitrite, has proved so effective. It has the advantages over the latter of being more permanent, more readily administered, and more sustained in action. In *sea-sickness*, *reflex vomiting*, *gastralgia*, *hepatic colic*, and other painful and spasmodic affections of the digestive tube, it may afford very prompt relief. It was first employed in the treatment of *angina pectoris*, in which it gives as much relief as does amyl nitrite, but the latter should be preferred when the utmost promptitude of action is necessary. The form of the disease requiring this medicine is that characterized by high tension of the peripheral vessels, which is doubtless the condition in the genuine cases of *angina pectoris*. Very prompt relief may be given to attacks of *hiccough* by this medicine. Some cases of *spasmodic asthma* are much benefited by it. The less there is of structural alterations, the more certain the relief. As the secretions of the mucous membrane of the respiratory tract are increased by it, the cases with deficient secretion are those most certain to be benefited. It should be carefully tried in *whooping-cough* and in *laryngismus stridulus*. There is much to be expected from nitro-glycerin in diseases of the nervous system characterized by heightened reflexes. An attack of *epilepsy* may be aborted by its timely administration, and Hammond finds it as a remedy for this disease second only to the bromides. By preventing the spasm of the vessels and consequent sudden anæmia of the brain, the first and most important event in the series can not occur. It should be fairly tried in *tetanus* and *hydrophobia*. In *neuralgia* of the fifth nerve it has given immediate relief in numerous instances. It is the most appropriate remedy in that form of *migraine*, or sick-headache, in which the vessels are in a condition of spasm, but is not proper in those cases having a flushed face from dilated vessels.

The cold stage of an *intermittent* may be aborted by the timely administration of nitro-glycerin. It promises to be especially useful in the pernicious malarial diseases to prevent the dangerous depression of the cold stage. In these cases its administration should be so timed that the physiological effect of the remedy occur at the onset of the cold stage of the disease. The mechanism of its curative action is obvious. Remarkable results have lately been obtained from this remedy in *acute and chronic Bright's disease* (Robson)—results which the author is able, from personal observations, to confirm. It is well

known, of course, that high arterial tension is present; but whether as causative of the renal changes, or a consequence of them, is not known. The apparently constant association of degenerative changes in the renal ganglia with the lesions of Bright's disease, discovered by Da Costa and Longstreth, would indicate that the state of the vessels is a factor in developing the structural alterations. The manner in which nitro-glycerin affords relief, and possibly effects a cure, is thus fully explained. Indeed, all of the curative results obtained from nitro-glycerin must be referred to its action on the vascular apparatus.

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Aconitum.—The tuberous root of *Aconitum napellus* Linné (Nat. Ord. *Ranunculaceæ*). (U. S. P.) *Racine d'aconit*, Fr.; *Eisenhutknollen*, Ger.

The Indian aconite-root, or *bish*, is supposed to be more powerful than the root of *Aconitum napellus*, and is preferred for the manufacture of aconitine (Flückiger and Hanbury).

Abstractum Aconiti.—Abstract of aconite. Dose, gr. ss—gr. j.

Extractum Aconiti Fluidum.—Fluid extract of aconite. Dose, ℥ j—℥ v.

Extractum Aconiti.—Extract of aconite. Prepared from the leaves. Dose, gr. $\frac{1}{2}$ to gr. ss.

Tinctura Aconiti Radicis.—Tincture of aconite-root. Dose, ℥ j—℥ v.

COMPOSITION.—The principal alkaloid is *aconitia* or *aconitine*, which exists in two forms, crystalline and amorphous, and forms with acids crystallizable salts. The crystalline form of aconitine is soluble in chloroform, ether, and alcohol. Aconite contains also another alkaloid which has received various designations—*pseudo-aconitine*, *napelline*, *nepalline*, etc., which is closely allied to aconitine, and is found in commerce under this name. It is but slightly soluble in chloroform, ether, and alcohol, and it exists also in two forms, crystalline and amorphous. Besides the foregoing, another base has been discovered, to which the name *napelline* has also been given (Hübshmann). This is an amorphous alkaloid, having strong basic properties, soluble in water, chloroform, and alcohol, but not soluble in ether.

These basic substances are united with a peculiar acid—*aconitic acid*.

ANTAGONISTS AND INCOMPATIBLES.—Alcohol, ether, ammonia, turpentine, digitalis, heat, etc., antagonize the actions of aconite. In cases

of poisoning, the stomach should be evacuated, stimulants administered by the stomach and rectum, and external warmth applied. Digitalis has been used with considerable advantage (Fothergill). The intra-venous injection of ammonia may be practiced, and artificial respiration resorted to. To overcome the depression of the heart's action, which is the capital point, the hypodermatic injection of atropine is indicated. As the chief danger consists in failure of the heart's action, the recumbent position should be strictly maintained.

SYNERGISTS.—All the agents of this group increase the effects of aconite. Cold, fatigue, and all depressing emotions, are also synergistic.

PHYSIOLOGICAL ACTIONS.—A drop of tincture of aconite placed on the tongue excites a warm and pungent sensation, followed by persistent tingling and numbness. Prolonged contact with the skin causes similar effects upon the sensory nerves. During the medicinal administration of aconite in considerable doses, irritation and a sense of constriction of the fauces are experienced. Large medicinal doses produce gastric pain, nausea, and even vomiting. When the gastro-intestinal mucous membrane is in an irritable state, aconite impairs the appetite, hinders the digestion, and causes diarrhoea, and in the normal state of the membrane, increases its secretions and hastens the peristaltic movements.

The systemic effects of aconite follow within a half-hour after its administration. The number and force of the heart-beats are reduced, and the arterial tension is lowered. The action of the skin is increased, and a more abundant urinary discharge takes place. If the quantity has been a full medicinal dose, some muscular weakness, tingling in the tongue, lips, and extremities, are also experienced. The whole duration of the effect is about three hours. When a lethal dose is swallowed, the symptoms begin in from five minutes to a half-hour. In a medical student, who swallowed by mistake a teaspoonful of the tincture of the root, the symptoms began after he had reached the college, having walked from his quarters—the time being about twenty minutes. He experienced an overpowering sense of fatigue in the lower extremities, and he felt, also, great muscular weakness. His eyesight became dim, the globes rather prominent, the pupils dilated. He experienced great dyspnoea, and his respirations were shallow and labored. The pulse was at first slow and small, and at last became imperceptible. The surface of the body, the tongue, and breath, were cold. The skin was covered with a profuse sweat. He was restless, anxious, and sighed frequently; but he had no stupor or convulsions. There were also decided numbness and tingling in the extremities, and in the tongue and lips. Tactile impressions were very faint, and the sense of pain was greatly reduced, so that he seemed almost unconscious of irritants. His temperature fell 2° Fahr. Under the use of heat, bran-

dy, and ammonia, he revived in the course of six hours, and, on the following day, although weak, there were no indications of the effects of the poison.

Aconite affects the sensory nerves before the motor. It paralyzes first the end-organs, next the nerve-trunks, and finally the centers of sensation in the cord. Aconite also impairs the reflex function of the spinal cord; but this effect is, doubtless, secondary to the sensory paralysis. The power of voluntary movement continues after the cessation of the reflex functions; but it is finally lost. The arrest of motility is due to the action of the poison on the motor centers of the cord, and subsequently on the nerve-trunks.

Aconite, applied directly to the heart, lessens the number and force of its beats, and finally arrests its action in the diastole. The cardiac muscle, after the cessation of its movements, does not respond to galvanic excitation. Aconite lowers the arterial pressure, as well as lessens the force of the heart-beat. From these facts it may be concluded that it is a direct cardiac poison, affecting its ganglia and muscle, and also a sedative to the vasor-motor nervous system. It is also a respiratory poison, in virtue of its paralyzing action on the muscles of respiration; but the action of the heart ceases before the respiratory movements.

Aconite increases elimination by the skin and kidneys. With increased discharge of water, there takes place, also, increased excretion of solids.

THERAPY.—The monopoly by homœopathic practitioners of the use of aconite has aroused a prejudice against it, which has discouraged its employment. Aconite is, however, an antagonist to the fever-process; it is not applicable in accordance with the so-called law of similars. It is used by these quacks because it is a powerful agent which will produce manifest effects in small doses, that may easily be disguised.

The author can quite agree with Dr. Ringer in the statement that aconite is a very valuable medicine, in the class of cases to which it is adapted. It lessens the pulse-rate, lowers arterial tension, diminishes abnormal heat; it therefore antagonizes that condition of the organism known as *fever*. As it also slows the respiratory movements, and thus lessens the amount of work done by the breathing apparatus, it is especially indicated in *inflammatory states of the respiratory organs*. As it diminishes the sensibility of the sensory nerves, it is useful in certain forms of *neuralgia*. As it induces muscular weakness and lowers the activity of the reflex functions, it is indicated in morbid states characterized by an excess of motor activity.

Tonsillitis, acute pharyngitis, ulceration of tonsils, when accompanied by fever and elevated arterial tension, are greatly relieved by the use of the tincture of aconite. From a half-drop to one drop every

half-hour, until an impression is made on the fever-movement, and then every hour or two, is the best mode of administration. In *acute catarrh* (nasal and faucial), *acute otitis*, and in *acute catarrhal bronchitis*, the best results may be obtained by the use of aconite, as above described. The author's observations entitle him to speak with confidence of the good effects of this remedy in *catarrhal* and *fibrinous pneumonia*. It is more especially serviceable before exudations have taken place, but is not without utility at any stage, provided the inflammatory process continues. It not only abates the symptoms, but it favors the removal of the products of inflammation, by increasing elimination through the skin and kidneys. The use of aconite is not incompatible with the employment of other measures which may be needed; but, generally, in fibrinous pneumonia, aconite is sufficient up to the period of crisis. The author has witnessed excellent results from the use of aconite in small doses frequently repeated (one drop every hour) in lowering the temperature of *phthisis*, especially when new districts of pulmonary tissue are invaded by pneumonitis. For the treatment of *acute pleuritis*, previous to the stage of effusion, no remedies are more effective than aconite and opium. ℞ Tinct. aconiti rad., ʒ ij; tinct. opii deodor., ʒ vj. M. Sig.: *Eight drops in water every hour or two.* If the pain is severe, a larger dose of opium should be administered, when the effect can be maintained by the quantity directed in the above prescription.

Overaction of the heart, with hypertrophy and without valvular lesion, especially if there be present a condition of plethora, is benefited by a quantity of aconite sufficiently large to moderate the cardiac movements.

Aconite is contraindicated in inflammatory states of the gastro-intestinal mucous membrane. It is very serviceable in *acute congestion of the liver* and *hepatitis*: it diminishes the fever, and, by causing free transpiration, lessens the pungent heat of the skin. *Peritonitis* is best treated by a combination of aconite and opium, as described above for pleuritis. Generally, the opium needs to be given in somewhat larger quantity in peritonitis than in pleuritis. In *pelvic peritonitis*, *puerperal metritis*, and *peritonitis*, aconite is indicated, and is of unquestionable utility, provided there be present a condition of sthenic reaction. A condition of adynamia, on the other hand, always contraindicates the use of aconite.

The simple fevers of childhood, *febricula*, *ephemeral fever*, arising from various causes, as cold, fatigue, excitement, etc., are best treated by small and repeated doses of aconite. The remedy induces sweating, and then the fever-movement subsides. The hot stage of *intermittents* and *remittent fever*, if any febrifuge is required, may be relieved of its intensity by frequently-repeated doses of aconite. The *continued fevers* are not benefited by this remedy unless a condition of hyperpy-

rexia is threatened, when aconite may be used in connection with other antipyretic remedies.

Aconite possesses the highest value in the *eruptive fevers*, especially in *scarlet fever*. There are two conditions of this disease especially requiring the use of aconite—the eruptive stage, and the period of desquamation, if, as is usual, a marked rise of temperature takes place at this period of the disease. Several important purposes are subserved by the use of this remedy: it lowers the fever-heat, favors the action of the skin and kidneys, and checks the nasal, faucial, and aural inflammations, which constitute such troublesome complications and sequelæ. The particular utility of aconite in *measles* consists in its power to arrest the catarrhal pneumonia, one of the most serious complications of this disease. We have no remedy more useful in *erysipelas*—idiopathic, so called, and not arising from trauma; but, on the other hand, Ringer describes an apparently erysipelatous inflammation following vaccination, which is quickly cured by aconite. According to the author's observations, it is facial erysipelas which is most decidedly benefited, and cases characterized by sthenic reaction. When there is a state of adynamia present, the eruption being dusky and the cutaneous circulation languid, belladonna is preferable to aconite. When, in *acute rheumatism*, there are much heat and a dry skin, instead of the usual sweating, aconite is very serviceable. It affords very considerable relief in *muscular rheumatism* when there is much fever.

In acute inflammation of the *cerebral* and *spinal meninges*, and in *cerebro-spinal meningitis* before effusion has taken place, aconite is as serviceable as in other acute inflammations. It is generally advisable to combine opium with it, especially in cerebro-spinal meningitis. In *acute maniacal delirium*, and in mental disorders generally, when there is much motor activity, with vascular excitement and increased arterial tension, aconite is useful, but is not so effective as gelsemium. Aconite renders important service in the *active form of acute cerebral congestion*.

Neuralgia, when accompanied by arterial excitement and muscular spasm, is relieved by aconite; but generally the neuralgias are much more successfully treated by hypodermatic injections and galvanism.

It is asserted by Ringer, and also by Phillips, that sudden *suppression of the catamenial flow*, caused by cold, can be relieved by aconite, in drop-doses of the tincture every half-hour or hour. The author can assert that this remedy has a high degree of utility in *congestive dysmenorrhœa*, occurring in plethoric subjects. These are cases, also, in which gelsemium is so undoubtedly beneficial.

Aconitine in Trigeminal Neuralgia.—Remarkable results have lately been obtained by the use of Duquesnel's aconitine in this malady. The following formula is proposed by the New York Therapeutical Society: ℞ Aconitinæ (Duquesnel's), gr. $\frac{1}{10}$; glycerini, alcohol., āā ʒ j;

aquæ menthæ pip., *ad* ʒ ij. M. Dose, a teaspoonful. The dose is sometimes very slowly and cautiously increased to $\frac{1}{2}$. Although it does not succeed in all cases of tic-douloureux for obvious reasons, it relieves remarkably in others (Seguin).

Napelline.—Duquesnel has lately rediscovered (?) a principle to which he has applied the name *napelline*. Its physiological actions have been studied by Laborde. He finds it weaker than aconitine, and was able to administer without ill results from a half ($\frac{1}{2}$) grain to three fifths ($\frac{3}{5}$) of a grain. It possesses valuable hypnotic properties, and it is proposed to use it as a substitute for opium and chloral. On trial it proved to be an effective remedy in *neuralgia*, and as a sleep-producing agent in cases of *wakefulness*, *mental excitement*, and allied conditions. If further investigations confirm those observations, it will be a valuable addition to the *materia medica*.

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Veratrum Viride.—American hellebore. The rhizoma and rootlets of *Veratrum viride* Aiton (Nat. Ord. *Melanthaceæ*). (U. S. P.)

Extractum Veratri Viridis Fluidum.—Fluid extract of *veratrum viride*. Dose, ℥ ij—℥ v.

Tinctura Veratri Viridis.—Tincture of *veratrum viride*. Dose, ℥ ij—℥ v.

VERATRINA.—Veratrine. An alkaloid or mixture of alkaloids, prepared from the seeds of *Asagracea affinis* Lindley (Nat. Ord. *Melanthaceæ*). Is pulverulent, grayish-white, inodorous, but very irritant to the nostrils. It has an acrid, bitter taste, causing a sensation of tingling with numbness in the tongue. It is very slightly soluble in water, but readily and wholly dissolved by alcohol. It has an alkaline reaction.

Oleatum Veratrinæ.—Oleate of veratrine. Veratrine, 2 parts; oleic acid, 98 parts. (For external use.)

Unguentum Veratrinæ.—Veratrine ointment. Veratrine, 4 parts; alcohol, 6 parts; benzoinated lard, 96 parts. (For external use.)

COMPOSITION.—*Veratrum album*, *veratrum viride*, and *veratrum sabadilla*, correspond closely in chemical composition, and the first two in botanical characteristics. *Sabadilla* is only used as the source of the alkaloid *veratrine*. The alkaloids of *veratrum album* are *jervine* and *veratralbine* (Mitchell). *Veratrum viride* contains two alkaloids also—*jervine* and *veratroidine*. The alkaloid *jervine* is found in both plants, is the same in chemical action and in physiological effects, and may, therefore, be considered identical. There are very close affinities between the *veratralbine* of Mitchell and the *veratroidine* first discovered by Bullock, but they are not the same; they differ as respects their chemical relations, and also in physiological properties, *veratralbine* being much more powerful than *jervine* and *veratroidine*. *Veratrum album* and *veratrum viride* contain abundance of soft resin, which, when pure, is nearly, if not quite, inert. As the alkaloid *jervine* is with difficulty separated from the resin, it is probable that the physiological activity, ascribed to the resin by some observers, is really due to the presence of the alkaloid.

ANTAGONISTS AND INCOMPATIBLES.—The effects of *veratrum viride* on the heart are counterbalanced by alcoholic stimulants, opium, and ammonia. When dangerous symptoms are produced, the recumbent position should be enforced, alcoholic stimulants should be administered by the stomach and rectum, and dry heat should be applied to the body. Ammonia may also be given by the stomach or by intravenous injection, and, if nausea and vomiting persist, morphine may be administered subcutaneously. The tincture of opium, in stimulant doses, may be prescribed with the alcoholic stimulants.

SYNERGISTS.—The vaso-motor depressants—tobacco, lobelia, aconite, etc.—are synergistic. Blood-letting, hæmorrhage, purgatives, and all agencies which diminish vital power, increase the effects of *veratrum*.

PHYSIOLOGICAL EFFECTS.—In the remarks which follow, *veratrum viride* only is referred to.

Applied to the skin, *veratrum viride* excites redness and heat, and, to the Schneiderian mucous membrane, it causes violent sneezing. It is a prompt and efficient emetic, but its operation is accompanied with intense nausea and depression, and the vomiting is often violent and persistent. The contents of the stomach are at first evacuated, and afterward of the gall-bladder, so that it has been supposed to possess the power to increase the secretion of bile. It does not generally purge, but occasionally profuse watery evacuations have been produced by it, and rarely severe hypercatharsis. Its alkaloids enter the blood with facility. The power which *veratrum viride* has to affect the cardiac movements and the vascular tonus is its most characteristic property. It lowers, in a remarkable manner, the number and force of the cardiac pulsations. The pulse may be reduced to fifty, forty, or even

thirty-five per minute, and its force correspondingly diminished. According to Linon, the arterial tension is raised, as shown by the sphygmograph. By very careful administration, this reduction in the pulse-rate may sometimes be accomplished without inducing nausea and vomiting, but usually vomiting can not be prevented when the remedy is pushed to this extent. When the pulse is reduced very decidedly, the patient being in the recumbent posture, a change to the erect position at once alters its character, and it becomes extremely rapid, thready, and feeble.

Very great depression of the powers of life is produced by large doses. The action of the heart becomes exceedingly weak, the pulse almost indistinguishable, the vomiting and retching extreme, the surface of the body cold and covered with a cold sweat, the temperature reduced. There are also produced faintness, dimness of sight, dilatation of the pupils, giddiness, great muscular weakness, shallow and slow respiration; sometimes somnolence, coma, and insensibility, with stertorous breathing. Notwithstanding the very formidable symptoms produced by large doses, fatal results have been extremely rare. An ounce of the tincture has been swallowed without causing death (Norwood). The prompt emesis which it produces is probably the explanation of its lethal inactivity; for, in the act of vomiting, the medicine is ejected with the first matter from the stomach. Suspension of the medicine and free stimulation quickly remove the most alarming symptoms of depression.

The experimental investigations into the actions of jervine and veratroidine, made by Wood, Peugnet, and others, have shown that the physiological actions of veratrum viride are the sum of the actions of the alkaloids. The nauseating and emetic qualities of the drug are due, chiefly, to veratroidine, and to a slight extent to the resin. Both alkaloids depress the functions of the spinal cord, and destroy its reflex activity; but they do not impair the excitability of the nerves, nor the contractility of muscles. Veratroidine, according to Wood, first stimulates the inhibitory cardiac nerves to an extraordinary extent, and afterward paralyzes them; but the evidence which he adduces in favor of the singular statements on this point are far from satisfactory. Both alkaloids lower the blood-pressure, by diminution of vaso-motor tonus, and paralyze the cardiac muscle, and probably also its contained ganglia. They cause death by asphyxia—by paralysis of the muscles of respiration. The cerebral effects which have been noted in man, and the convulsions in animals, are doubtless due to the accumulation of carbonic acid in the blood.

THErapy.—The best preparation for administration is the tincture. As the therapeutic properties of veratrum viride depend, chiefly, on the jervine, an attempt may be made in the future to supply this alkaloid in sufficient quantity for administration; but, at present, the pro-

cesses involved in its preparation are too intricate and expensive. As the effect of veratrum viride quickly reaches its maximum, if it be desired to maintain the pulse-rate at a constant level, the doses must not be at a longer interval than two hours. The effect must be maintained by increasing doses, if necessary, and the recumbent posture must be rigidly enforced.

The emetic property of veratrum viride is never applied in practice; too much depression is produced by it. The chief use of this agent is to depress the action of the heart and to lower the vaso-motor tonus. In simple *hypertrophy of the heart*, without valvular lesion, it diminishes the overaction and thus gives relief to the most distressing symptom. The *irritable heart*, so frequently found associated with and dependent on the excessive use of tobacco, on mental excitement and irascibility of disposition, and on overstrain, is relieved by this remedy, provided no valvular lesions coexist. The *hypertrophy of the cardiac muscle*, and the *abnormal arterial tension*, which accompany the chronic form of albuminuria, are alleviated by veratrum viride. Moderate doses of the tincture (five drops *ter die*) usually suffice in these cases. When there are valvular lesions, and when the cardiac muscle is enfeebled from any cause, this agent is inadmissible.

Excellent results are sometimes obtained in *aneurism* by the use of veratrum viride. In the various surgical expedients for the cure of aneurism (forced flexion, compression, ligation), this remedy, used to depress the circulation, renders an important service, by lessening the force with which the blood is propelled, and the number of the cardiac contractions. In this way, coagulation of the blood in the aneurismal sac is greatly favored. In the case of large internal aneurisms—of the innominate, aorta, etc.—veratrum viride is a powerful adjunct to rest and other means of treatment. Some precautions are necessary, however, in the administration of this remedy. As the utmost slowing of the circulation consistent with safety may be required, a sufficient quantity of the tincture must be administered to accomplish this object, and the effect produced is the only measure of the amount to be given. The result must be accomplished, if possible, without causing vomiting. The patient should, therefore, remain absolutely in the recumbent posture, and a little opium should be prescribed with the veratrum viride. *Active hæmorrhage*, occurring in the plethoric, is sometimes stopped by full medicinal doses of this drug.

There can be no doubt that veratrum viride renders an important service in *acute parenchymatous congestion*—of the brain, lungs, liver, and other organs. Its utility ceases when exudations have taken place: its action is confined to the influence which it has in diminishing the blood-supply to the affected organs. The changes produced by inflammation are in no wise affected by veratrum viride. Much

that is extravagant has been written in regard to its curative influence in *pneumonia*, but we need not be surprised at this, when we reflect that our knowledge of the natural history of this disease is only of recent origin. Those who knew nothing of the period of crisis of pneumonia naturally attributed the defervescence of temperature to the effect of the remedy. It is not to be denied that in the very incipency of pneumonia, before fibrinous exudation has taken place, veratrum viride, by lessening the amount of blood circulating in the lungs, may render an important service, but when hepatization occurs its good effects cease. The same observations are true of other parenchymatous inflammations, and equally so of serous inflammations.

Veratrum viride has been much extolled as a remedy for reducing the pulse-rate and the temperature in *typhoid and other fevers* (Norwood). It is true, these effects may be procured by it, but that any influence is exerted in this way, over the course and duration of a fever, seems highly improbable. The chief dangers in fever being the occurrence of cerebral or cardiac paralysis due to the persistent elevation of the temperature, it is unwise to use a powerful cardiac depressant, although it has the power to lower the temperature somewhat. There is, however, a condition of things arising in the course of fevers—viz., *delirium ferox*—in which, when dependent on arterial excitement, much good may be accomplished by the use of veratrum viride.

The excitement of *acute mania*, of *maniacal delirium*, and other forms of mental disorder in which a condition of cerebral hyperæmia may be supposed to exist, is successfully combated by veratrum viride. In a private communication, Dr. Sullivan, of San Francisco, informs me that this agent (3 ss of the fluid extract every fifteen minutes until nausea or vomiting ensues) is "*invaluable in puerperal convulsions.*" Barker, in his "*Puerperal Diseases,*" had already called attention to its utility, and Boyd confirms the previous observations. It well deserves trial in this malady and in analogous states.

Veratrine is used only externally, and for the relief of *neuralgia*, *headache*, *myalgia*, etc. The official *unguentum veratriæ* is the form in which it is employed—a small quantity being rubbed in over the seat of pain.

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Pulsatilla.—Pasque-flower. The herb of *Anemone pulsatilla* and *Anemone pratensis* Linné, and of *Anemone patens* Linné, var. *Nuttalliana* Gray (Nat. Ord. *Ranunculaceæ*), collected soon after flowering. (U. S. P.) *Pulsatille*, Fr.; *Küchenschelle*, Ger.

PREPARATIONS.—There are no official preparations. The tincture is the form usually employed in medical practice, the dose of which varies from one minim to twenty minims.

COMPOSITION.—The peculiar powers of the plant depend on the presence in it of an alkaloid—*anemonine*, a camphor. Anemonine crystallizes in prisms—the regular rhombic system—and is hardly at all soluble in cold water and in alcohol (Husemann). Pulsatilla also contains a peculiar acid—*anemonic acid*.

ANTAGONISTS AND INCOMPATIBLES.—The caustic alkalies, tannic acid, and the metallic salts generally, are chemically incompatible. From the physiological standpoint, pulsatilla is antagonized by the alcohols, by opium, digitalis, etc.

SYNERGISTS.—The effects of pulsatilla are promoted by the paralyzers, especially by the other members of the same family—notably, by aconite, veratrum viride, etc.

PHYSIOLOGICAL ACTIONS.—The local effects of pulsatilla (the fresh plant) are those of an irritant; and, after prolonged contact, even caustic effects are produced. Applied to the tongue, it gives rise to tingling, burning, followed by numbness—effects very similar to those caused by aconite. On the intestinal mucous membrane it has very pronounced irritating effects. The active principles diffuse into the blood with facility. Depression of the heart's action, lowering of the arterial tension, and declination of temperature, are caused by pulsatilla. It is a paralyzer of motility and sensibility, but, as respects the motor functions, it is not known whether it impairs the contractility of muscle or the irritability of nerve; and, as respects sensation, it has not yet been determined whether the lessened sensibility is due to an influence which this remedy has on the spinal cord, on the nerve-trunks, or on the peripheral expansion—end-organs of the sensory system. Dilated pupils, hebetude of mind, stupor, coma, and convulsions, are cerebral symptoms which occur after a lethal dose has been administered. These cerebral effects may be due to a primary action of pulsatilla on the brain, or to the carbonic-acid poisoning and the anæmia. When the action of the heart and the respiration are very feeble,