

very obstinate complaint, especially with adults. Children are most prone to it. The influence of the chlorate on this form of ulceration is almost magical; in one or two days it cleans the dirty-looking ulceration, and heals it in a day or two more. It is said to cure follicular and phagedenic ulceration like a charm.

Dr. Leonard Sedgwick speaks highly of chlorate of potash in catarrh: he says, it quickly relieves the stuffing of the nose, rawness of the throat and thickness of voice. Taken early and frequently, it will stop many a cold. Eight or ten lozenges should be sucked in the twenty-four hours.

Some assert that the action of chlorate of potash is simply local, and that all its good effects are due to its topical application.

Chlorate of soda is more soluble than chlorate of potash, and is said to be equally serviceable.

It seems to produce but little effect on the stomach, unless taken in considerable quantities, when, like the nitrates, it inflames the mucous membrane, and produces both vomiting and diarrhoea. It is not employed in diseases of the stomach.

It passes readily into the blood; owing to its high diffusion-power; but owing to its slight solubility, a large quantity of this salt cannot be conveyed quickly into this fluid.

Dr. Kent Spender recommends large doses of it in phthisis, and lets the patient drink a concentrated solution, *ad libitum*. This treatment, he says, checks diarrhoea and prolongs life. He recommends also, large doses in the stomatitis of children.

As this salt easily loses its oxygen, it was at one time supposed, that yielding up this element to the blood and tissues, it might promote oxidation; but careful observations have proved conclusively the erroneousness of this view, as the salt can be obtained unaltered from the urine.

It has been recommended in facial neuralgia.

Its influence, if any, on the organs of the body is unknown.

ALUM.

DRIED ALUM.

ACETATE OF ALUMINA.

These salts act mainly as astringents, in virtue, it is supposed, of their capacity to unite with albumen, and coagulate it.

They produce no effect on the entire skin; but when applied to sores, they coagulate the albumen of the pus, mucus, or of the tissues themselves, thus coating the sore with an impermeable layer, and protecting it from the action of the air. Alum, like many other metals, may be used to form this protective coating. These remedies have, however, a further action than that just described; for, as just stated, they act as astringents by combining with and condensing the tissues. The topical application of alum contracts the bloodvessels and lessens the supply of blood to a sore. By constricting the bloodvessels, and by condensing the tissues themselves, the members of this group will depress the vital action of a sore, and so check the secretion of mucus or pus. For this purpose alum is applied dry, or in solution, to relaxed and abundantly secreting sores.

Other astringents in such cases generally succeed better.

Alum solutions may be applied to free-weeping eczematous surfaces, to check profuse discharge, and to bring the eruption into a condition suited for other remedies. Alum, like other astringents, is generally insufficient to heal the eczema.

Owing to their capacity of condensing tissues and coagulating albumen, these substances may be used to control bleeding, and alum has the advantage of being almost always at hand in an emergency. It is applicable only in the milder forms of bleeding. In severe hæmorrhage other treatment is of course required. But to check the bleeding of piles, leech-bites, or slight cuts, alum dusted on the affected part, first wiping it dry, or applied in pretty strong solution, is generally sufficient. Bleeding from the gums may be

treated in the same way. Alum may be injected into the nose in epistaxis, or may be snuffed up as the dried powder.

Alum in strong solutions (six grains to the ounce) has been recommended in prolapsed anus or uterus, but is little used in either case.

As a wash in vulvitis of children, few remedies can be compared to alum, used in the strength of sixty grains to a pint of water. This solution must be frequently applied, by the help of a syringe, to the secreting surface, first washing away the pus with warm water. The lotion should be applied every hour or oftener, and a piece of lint soaked in it should be left between the parts. Although generally successful, this treatment not unfrequently fails to check this troublesome complaint, even when it cannot be traced to any irritation, as worms, constipation, or teething. The discharge in some cases, besides coming from the surface of the vulvæ, is poured out from the lining membrane of the vagina, when it is necessary to take care to pass the injection up the vagina. Want of attention to this fact explains the occasional failure of treatment and apparent obstinacy of the case. The solution just recommended may sometimes prove too strong, increasing both the inflammation and discharge, when of course its strength must be reduced.

Similar solutions are useful in chronic otorrhœa, although alum is far inferior to glycerine of tannic acid.

A solution of alum of the strength of eight grains to the ounce of water is an excellent solution in simple, and especially purulent ophthalmia of children. The conjunctiva must be well washed with it every quarter or half-hour. The frequency of the application is the chief condition of its success; for simple water, as frequently applied, is a useful, although inferior, application.

Few substances are so useful as alum in certain diseases of the mouth. Thus in simple ulcerative stomatitis,—that form which, beginning at the edge of the gums and never spreading far beyond, is often limited or most marked over one half of the jaw,—dried alum applied dry by the finger many times

a day will heal the ulceration in a few days. It is not merely astringent; but, from its attraction for water (which it has lost by being heated), it is also slightly escharotic, and gently stimulating to the indolent tissues. Ulcers like these, produce ulceration by contact with the contiguous mucous membrane of the tongue or cheek.

Apthous ulcers, showing but little disposition to heal, or indeed tending to spread, may be touched with dried alum a few times a day with the best effect. Usually no such application is required, and chlorate of potash, and perhaps a purgative, are all that is required. Other forms of ulceration may be treated in the same way. Alum is recommended to be applied to the throat either dry or in solution in simple or scarlatinal sore throat, in tonsillitis, and even diphtheria. Alum being now little used in any of these cases, perhaps its advocates exaggerated its good effects.

It is asserted that ten grains of powdered alum placed dry on the tongue will sometimes arrest a paroxysm of asthma.

Gargles of alum are more useful in chronic inflammations of the throat, when the mucous membrane is relaxed and covered with a grey mucus or with pus. Although alum is highly useful, the glycerine of tannin is a surer and less disagreeable application.

In chronic ozœna a solution of alum, a drachm to the pint, is highly serviceable. Many cases speedily yield to efficient irrigation. About a foot above the patient's head is a basin containing the solution, and in this, one end of an elastic tube is placed. The solution is then sucked into the tube, when the free end is placed in one nostril, and the ala of the nose pressed on it to secure it in position. Here we have a siphon, and the fluid runs from the vessel through the tube, up one nostril and down the other, washing the sinuosities of the nasal membrane most thoroughly. The head is bent a little forward, and the mouth must be kept open, and, if properly managed, none of the solution escapes by the mouth, but the whole of it runs through the nose.

This application generally removes the disease very speed-

ily; and even when it fails to eradicate the disease, it checks the discharge, and removes the offensive smell so often present. Some prefer acetate of alumina as more efficient than simple alum, in correcting the foeter. If the foeter persists, the application should be used twice a day, or oftener. If the foeter is very great, a weak solution of permanganate of potash or carbolic acid may be used. This foeter, depending on decomposing matters, can generally be prevented by irrigating the nose in the manner described. A wash of a solution of glycerine of tannin in water is often useful. A strong solution of alum is sometimes useful in pruritus vulvæ.

Ten grains of alum to the ounce of water is used in the form of spray for chronic coughs and hoarseness.

Alum behaves in the stomach, as on the denuded skin, coagulating the albumen, and constringing the mucous membrane; and it hinders digestion by each of these processes. It will often check bleeding from the stomach, but it is inferior to other astringents. It sometimes controls vomiting. In six to ten grain doses it sometimes checks obstinate forms of vomiting, occurring in phthisical patients, especially that form excited by coughing.

Dr. Meigs speaks very highly of alum emetics for children. He prefers it to other emetics in croup. He gives a drachm in honey or syrup every ten or fifteen minutes till the child vomits, but a second dose is not generally required. Alum, he says, does not weaken, and does not lose its effects so soon as antimony or ipecacuanha. Dr. Meigs strongly advocates the employment of emetics in true croup, and thinks that many lives might be saved were they more frequently used and repeated oftener. In severe cases he produces vomiting three or four times a day, or even oftener. This treatment must be begun early.

Alum checks secretion from the mucous membrane of the intestines and constipates by rendering the contents of the canal more compact and more difficult of propulsion. Alum is sometimes used in both acute and chronic diarrhœa, and it

has proved useful in the diarrhœa of typhoid fever and of dysentery.

It is uncertain how far the members of this group pass down the intestinal canal, but probably not far without being decomposed and rendered inert. Alum has been extolled by the highest authorities in lead colic. It is said to remove the spasm and the pain, and at the same time to unload the bowels more speedily and certainly than other remedies. It is given in considerable quantities, as much as ten grains every hour. The few trials the author has given this treatment have not been rewarded with success.

The long-continued administration of these substances produces loss of appetite, constipation, and at last chronic catarrh of the stomach and intestines. Large doses cause gastro-enteritis at once with its usual symptoms.

In certain stages of whooping-cough alum is an excellent remedy. It is useful when the acute stage is over, and when there is no fever nor inflammation of the lungs, nor any irritation of the teeth. In fact, it is useful only in uncomplicated cases; but in these, few remedies give more satisfactory results. It speedily reduces the violence and frequency of the paroxysms, often indeed at once lessening the frequency one half, and, in fact, soon cures the case.

Alum checks, often straightway, the troublesome vomiting so often met with in this disease, while, at the same time, the appetite much improves—effects observed sometimes even before the cough undergoes any diminution. Constipation rarely happens when alum is administered.

The alum may control whooping-cough by its astringent action on the throat, and in support of this conjecture is the fact that other astringent substances, as tannin, etc., are likewise useful (see Tannin), even when the remedy is applied only to the throat; and that alum itself acts best when mixed with some tenacious fluid, as gum, glycerine, or honey, by which the solution is made to hang for some time about the fauces.

The alum should be given in doses varying from two to

six grains every three hours, or it may be given hourly in corresponding doses. Alum is generally beneficial in the paroxysmal cough, which may continue a long time after the characteristic whoop has disappeared, and in other coughs having the same spasmodic character.

How much of these substances is absorbed by the intestines, and conveyed into the blood, is unknown; but probably not a large quantity. The chief part escapes with the fæces, which the alum is said to make firmer and odourless.

It is doubtful if alum has much effect as a remote astringent to check bleeding from the lungs, uterus, kidneys, etc, and to check profuse sweating and discharges. Alum injections, one drachm to a pint, employed in the manner directed for the injection of carbonate of soda (see Potash Group), are very useful to check leucorrhœal discharges. The alum solution constricts the parts, and sometimes causes severe cramp-like pains in the belly.

PREPARATIONS OF IRON.

IRON is a constant and necessary constituent of the body, and must be regarded as an important food.

None of the preparations of this metal applied to the skin produce any change in it. Several of the soluble salts combine with albumen on raw surfaces, sores, and mucous membrane, condensing the tissues, and constricting the blood-vessels; and, independently of this astringent action, they act at the same time as stimulants or irritants according to the strength of the application or the condition of the sore.

The organic salts are less astringent and stimulating than the inorganic; while, of the inorganic, the ferric salts possess these properties in a greater degree than the ferrous salts.

Several compounds of iron may be employed as astringents and stimulants; but, when a stimulant is required, other metallic preparations are preferable. The sulphate, but es-

pecially the ferric chloride, solid or in solution, is employed to check hæmorrhage. The chloride is a powerful styptic, and readily controls the bleeding from small vessels, but it has the disadvantage of irritating the surface of wounds and preventing union by first intention. Carbolic acid will probably supersede perchloride of iron; for this acid, properly employed, does not prevent the immediate closure of a wound.

The soluble preparations have a metallic astringent taste, and act on the mucous membrane of the mouth as on the abraded skin.

Iron salts are never employed as topical agents in diseases of the mouth; and as they often discolour the teeth, especially when the breath contains sulphuretted hydrogen gas, arising from carious teeth, etc., they are often taken through a quill, glass tube, or reed. They are conveniently given in the form of pill. Salts of iron stain the tongue black.

The effects of these salts in the stomach differ according to their properties. Some are astringent, stimulating, and in large doses irritating to the mucous membrane, as the pernitrate, the perchloride, the iodide, and the sulphate, while the remaining preparations are with respect to this membrane almost inert. If the stomach is irritable, then bland preparations of iron must be chosen. It is often stated that chlorotic or anæmic patients with weak stomachs must be treated with bland unirritating preparations of iron. In some instances, no doubt, the astringent preparations are ill borne, but in most cases they produce far better results than the bland forms of iron. A pale, flabby, broad, and teeth-indented tongue indicates almost always the need of large doses of the astringent preparations of iron. Thirty drops of the tincture, or three or four grains of the sulphate, may be given three times a day. Weak anæmic girls, suffering from pain and vomiting after food, with perhaps tenderness of the skin at the epigastrium, are often effectively treated by large quantities of the tincture of the perchloride.

The soluble preparations of iron combine with the albumen in the stomach, while the insoluble preparations are dissolved