heart, and hence failing respiration occurs before failure of the heart's action.

Only one death is known to have occurred within an hour of inhaling the gas. This case was one of extensive phthisis, and it has been supposed from this case, and from the lividity induced by the gas, that persons with delicate lungs are not fit subjects for taking it. If extensive disease of the lung exists, it would be imprudent to use it in the present state of our knowledge; but I have given it where I have believed only a moderate lung disease existed, and observed that in these cases no untoward symptoms were produced. Persons liable to syncope would seem to be unfit subjects, but many such patients have taken the gas without serious consequences having occurred.

I have known no signs of mischief to the brain follow the inhalation. I have given it successfully to several persons who were the subjects of epilepsy.

Pregnancy is not a bar to its use; but in such cases it should be given with caution.

The danger of death from blood getting into the trachea would be as great, or greater, than when chloroform is given. The patient would unfortunately show no signs of it, as the lividity which *might* tell of it would, of course, not be distinguishable from that of nitrous oxide.

From all that I have seen of the administration of anæsthetics, and from the accounts published of the cases where they have been followed by a fatal result, it appears to me of little importance what is the age, temperament, or disease of the patient, in estimating the danger of using them. The young and old, feeble and strong, fat and thin subjects, have all on some few occasions died from them. On the other hand, we have witnessed the successful administration of chloroform, etc., in the advanced state of phthisis, heart disease, etc. The only reasonable hope of security lies in carefully preventing an overpowering dose, or the prolonged exhibition of a milder one, after symptoms of failing lungs or heart have shown themselves.

SULPHUR.

Sulphur dusted on the skin produces no effect on it, but mixed with lard or other unctuous substances, and rubbed in, it excites a slight degree of inflammation, on which account sulphur ointment has been applied to indolent sores to stimulate them to a healthier and more healing condition; but more efficient ointments for such a purpose have superseded sulphur ointment, which is now almost entirely restricted to the cure of itch. The object is to destroy the insect (*acarus scabiei*) and its ova, for it is on the presence of this animal that itch depends. A knowledge of their habits suggests the means best calculated to destroy them. The female, as soon as impregnated, burrows obliquely under the skin, and day by day deposits her eggs till she dies. The male remains a wanderer on the surface, and is easily attacked and killed by the ointment. To reach and destroy a female and her eggs, it is necessary to break up the burrows where these lie concealed, and to lay them bare to the action of the sulphur ointment. The destruction of the burrows is easily effected by the liberal use of soap and water, which removes the superficial and dead cuticle, and exposes the animal and its ova.

Various methods of sulphur treatment are in use, but it is sufficient here to record only a few.

M. Hardy claims that his method will cure in four hours. He first orders the body to be subjected for half an hour to a friction of soft soap, which cleanses the skin and lays bare the burrows. Then follows a warm bath of an hour's duration, during which the skin is well rubbed to complete the destruction of the burrows. Then the skin is well rubbed all over, except the head and face, unless in the rare instances when these parts are attacked, with an ointment composed of two parts of sulphur, one of carbonate of potash, and eight of lard. One such course effects a cure.

This rather severe method not unfrequently irritates, in-

flames, and chaps the skin, and is, therefore, inapplicable for delicate skins, especially if much eczema or inflammation is present, which would undoubtedly be much aggravated by such vigorous treatment.

It is often sufficient to subject to this treatment only certain parts of the body, where the rash is most apparent, and to apply the ointment to other parts in a milder manner.

If the skin is delicate, much irritated, or inflamed, a mild soap may be substituted for soft soap, and an ointment without alkali and with less sulphur, while the time of the applications should be shortened, and the several washings and inunctions, repeated on successive nights, should replace the one continuous severe application. The ointment should be left on all night.

The simple ointment of the Pharmacopœia, containing no potash or other alkali, and little irritating to the skin, is in most instances sufficient. The patient should be directed to take a nightly warm bath, and to rub the skin with soap, bland or strong, according to the condition of the skin. After wiping the body thoroughly dry, the ointment is to be well applied to the skin, by the fire-side, just before bed-time, and to be washed off on the following morning. In three days the patient is usually cured.

The irritation set up by the parasite and its eggs excites sometimes more or less eczema and impetigo, when the foregoing treatment, although it would cure the itch, would certainly aggravate these accompanying eruptions. To avoid this complication, Hebra recommends a milder ointment of a different composition; namely, of chalk, 4 oz.; of sulphur and prepared tar, each 6 oz.; of common soap and lard, each a pound. In this preparation the various constituents serve each a distinct purpose. The chalk helps mechanically to remove the dead cuticle and to break up the burrows. The tar serves the twofold purpose of diluting the sulphur and acting beneficially on the eczema, while the soap and lard further effect the dilution of the sulphur; and the soap, by virtue of its alkali, checks the weeping from the red, raw,

eczematous eruption. The application of this ointment, accompanied with the use of the warm bath, is employed twice in the day. In three days the cure is complete.

After the itch is cured, it often happens that even the mildest ointments excite and increase the eczema and other eruptions produced by the scabies. It is inadvisable, therefore, to continue for many days the use of such ointments, otherwise they may perpetuate these rashes. On withholding this treatment, the rashes produced by the scabies will frequently disappear at once. After treatment, the patient must put on an entire change of linen, and the soiled clothes should either be boiled in water, or heated in an oven, at a temperature above 212° Fah., to destroy the animals and their ova concealed in the texture of the linen.

Some maintain that the sulphur of the ointment plays no part in the destruction of the animals and their eggs, but that the fatty matters, by obstructing their breathing-pores, suffocate, and so destroy them. This opinion seems to be erroneous, a sulphur ointment being far more effectual than a simple fatty one. Sulphuretted hydrogen destroys lice, and some suppose that sulphur kills the itch insect by conversion into this gas.

Except in rare cases, the ointment need not be applied to the head and face, as in this country these parts are not often affected. The disagreeable smell of the ointment may be in part concealed by the addition of some otto of roses or other agreeable odorous substance.

On account of the disagreeable smell and irritating effect of sulphur, many dermatologists substitute storax, which is said to be as effectual as sulphur.

The complexions of some young women, in whom the menstrual flow is disordered, are spoiled by numerous small elevations or pimples, scarcely or not at all reddened, the skin at the same time losing its healthy transparency. Sometimes on the summit of the elevation a minute pustule forms. This may be a form of acne, but is unlike that commonly seen. Sometimes the eruption appears without disturbance

of the menstrual functions, and at the menstrual period may almost disappear, to recur when the discharge has ceased. This complaint may last months, or even years, greatly to the annoyance of the patient. It will, however, very generally yield to the application twice or three times daily, of the following lotion:—Sulphur, a drachm; glycerine, an ounce; rose water, half a pint. This lotion speedily benefits the eruption when it has continued for years uninfluenced by other treatment. Acne may be treated in the same way.

An ointment composed of two drachms of hypochlorite of sulphur and an ounce of simple ointment, or especially iodide of sulphur ointment, are very useful in the severer forms of acne, (see Sulphides). They should be applied twice daily. Where acne indurata is accompanied by much acne punctata, these applications may be assisted by frequent washing with plenty of soap and warm water. In genuine prurigo, Dr. Anderson applies night and morning an ointment composed of an ounce of sulphur, six drachms of liquid tar, and four ounces of benzoated lard.

Being quite insoluble in any of the fluids of the mouth, sulphur possesses no taste; but, as it often contains a small quantity of either sulphurous acid or of a sulphide, it may partake of the flavour of these substances. It undergoes no change in the stomach, and in no way affects the mucous membrane of this organ.

In the intestines, however, the case is quite otherwise. Here, in ordinary doses, sulphur causes rumblings, slight colicky pains, followed in a short time by a softened evacuation, which may be soon repeated. From the occurrence of colic, and the semi-solid condition of the motions, it is generally held that sulphur acts but slightly on the mucous membrane, but purges chiefly by exciting contractions of the muscular coat of the intestines. From the mildness of its operation it is ranked among the laxatives. The precipitated sulphur, being more finely divided than the sublimed, acts as a purgative more surely and effectually.

If taken for too long a time, it excites a catarrhal state of the mucous membrane, and impairs digestion.

It is useful when a mild purgative is required, and when it is needful to maintain the motions in a soft and yielding state, as in piles and fissure of the anus, so that they may not be irritated and pained by hard difficult stools. It is also employed in stricture of the rectum and in habitual constipation. In habitual or obstinate constipation it often succeeds after the failure of other remedies. The compound liquorice powder of the Prussian Pharmacopœia, or 10 gr. of sulphur mixed with confection of sennæ are convenient forms. The compound liquorice powder contains both sulphur and senna, and is not disagreeable; indeed children like it; hence, as Dr. George Bird tells me, it forms an excellent purgative for children. The dose for adults is one to two teaspoonfuls stirred in a little water or milk. Apart from its softening effect on the motions, sulphur exerts a beneficial action on the rectum in prolapsus and in piles. Five to ten grains of sulphur, mixed in a drachm of confection of senna, each morning, is a very useful laxative in piles.

What changes does sulphur undergo, and in what way does it act as a purgative?

It has been suggested that some of the sulphur becomes dissolved in the fat it meets with in the intestines, and is thus in a fit condition both to act as a purgative and to pass into the blood; the fact that, when sulphur is administered simultaneously with much fat, the quantity of the sulphur in the urine is not increased, renders this explanation improbable.

Some of the sulphur, undoubtedly, is converted into a sulphide by the action of the alkali of the bile; for after the ingestion of sulphur, not only does the gas generated in the intestines contain a considerable quantity of sulphuretted hydrogen, but much of this gas is given off by the skin, to the extent even of tarnishing metal articles worn about the person. By conversion into a sulphide, sulphur acts as a purgative, and by virtue of the same change it is enabled to

enter the blood. This view is supported by the fact that sulphides act in the same way as sulphur. Yet a portion in the form of fine particles, probably passes through the walls of the intestines undissolved, but the quantity so conveyed is undoubtedly very small.

The action of sulphur on the physical or chemical constitution of the blood is at present unknown. It has been said to produce salivation occasionally in persons who had previously taken mercury. The opinion is general that it excites in healthy persons an increased secretion from the mucous membrane of the air passages, although Buchheim denies this. Graves, and other authorities, strongly recommended sulphur in doses of from five to ten grains, repeated three or four times a day, in severe chronic bronchitis, with abundant discharge, especially when accompanied by constitutional debility. It is said to lesson the secretion, and to render its expulsion easier.

It increases, so it is said, both the frequency and force of the heart's contractions, and promotes the flow of perspiration; but these assertions both greatly need confirmation.

It is asserted that the pain of chronic rheumatism and sciatica may often be relieved by applying sulphur to the skin over the seat of pain; but, as in applying the sulphur it is generally recommended to envelope the affected limbs in soft flannel, it is difficult to discriminate to what extent relief is attributable to the sulphur or to the flannel.

Chronic eruptions of the skin of the dartrous family, as acne, psoriasis, impetigo, and eczema, are said to be benefited by the internal administration of this remedy.

Most of the sulphur taken into the stomach escapes with the fæces; while part of that which enters the blood, becoming oxidized, appears in the urine as a sulphate or one of the lower oxides of sulphur. The sulphuretted hydrogen, from its great volatility, escapes in some measure by the lungs and skin, and occasionally with the milk, and by the urine.

Some aver that a portion of the ingested sulphur passes

through the system, and is separated by the kidneys in the uncombined state. Sulphur produces no change in the quantity of the constituents of the urine, with the exception of the sulphur compounds, which it augments.

Sulphur may be conveniently administered in milk.

SULPHIDE OF POTASSIUM.
„ SODIUM.
„ AMMONIUM.
„ CALCIUM.

Many natural waters contain one or more of these substances. Sulphurous waters are found at Harrogate, Barèges, etc. They have a characteristic disagreeable odour like that of rotten eggs.

The three first substances are freely soluble in water; the last is very scantily soluble.

Strong solutions of these soluble salts excite active inflammation of the skin; weak solutions stimulate the skin, augment its supply of blood, and increase perspiration.

Baths containing these substances prove very useful in the chronic forms of some skin diseases, as psoriasis, eczema, and lichen; likewise in chronic rheumatism, chronic gout, and chronic lead poisoning. In these diseases the natural sulphurous waters are largely used as baths. Care must be taken not to employ them till the subsidence of the acute stage of eczema and psoriasis, otherwise they will much aggravate the rash. Obstinate forms of these skin diseases, rebellious to other treatment, often yield to these baths.

The good results of sulphurous baths, in cases of chronic lead poisoning, has been explained by the assumption that they eliminate the lead with the sweat. It is said that under the use of these baths, the skin becomes covered with innumerable black points of sulphide of lead; but to this it may be objected that the lead thus blackened is deposited