expectoration and irritation, should excite the other parts of the air canal and induce cough. In like manner chlorine disinfects the disorganized parts in gangrene of the lungs, but if it reaches the non-sphacelated parts it acts as a violent irritant. He concludes by urging the necessity for great caution in its employment.

That these views are, at least in part, correct, may be seen from the fact, that chlorine introduced into healthy bronchi, causes the most violent irritation there, whereas it may be inhaled in union with aqueous vapour for some time together, in cases of bronchitis with purulent expectoration.

The last case mentioned by the anonymous author, namely, gangrene of the lungs, is certainly one of the best for the inhalation of chlorine. Dr. Crane of the St. George's Dispensary published an instance of its successful employment in pulmonary gangrene, which may be found in the 2nd vol. of the Medical Gazette for 1833. The French editors of the Archives Générales, in transferring the case to their pages, doubted whether it was one of the disease in question. I repeatedly saw the patient in company with Dr. Crane, and am convinced that these doubts are unfounded, and that it was a *bonâ fide* case of gangrene. The man completely recovered, and though his pulmonary organs remain, as might be expected, weak and sensitive to changes of temperature, he is still without cough, and able to pursue his avocations.

It is curious that Laennec should so positively state that pulmonary gangrene is incurable.—*Tr.*]

CHLORURETS OF LIME AND SODA.

The inconveniences of chlorine gas, as a disinfectant, had always been felt when it came to be applied in rooms containing many individuals. Too little of it left the miasm untouched, whilst too much induced suffoca-

tive respiration. Some other mode of disinfecting was therefore desirable, and was found.

In the year 1812, M. Mazuyer, professor in the Medical Faculty of Strasburg, made known the superior advantages of the chloruret of lime over chlorine, on account of its greater disinfecting power. At that time he employed habitually and successfully the solution of the chloruret for the disinfection of typhus hospitals and anatomical dissecting rooms. Still the facts adduced by M. Mazuyer failed to attract attention, and the remedy remained comparatively unnoticed.

Nine years subsequent to this time the Society for the encouragement of national industry proposed the question of the purification of catgut manufactories; the prize was gained by M. Labarraque, who, in his memoir, demonstrated by numerous experiments that the chloruret of soda was one of the most powerful agents in the instantaneous removal of the disgusting odour arising from the macerating intestines. He also extended the use of this disinfectant to all putrifying animal matters; and many distinguished physicians have since applied them in medicine.

The experience of several years having established the efficaciousness of the chloruret of lime for the purposes proposed, the Académie des Sciences, in 1825, awarded the Monthyon prize of three thousand francs to M. Labarraque; and having moreover ascertained that M. Mazuyer had been in the habit of using the same means to the same end, ten years before, they voted to that gentleman a sum of two thousand francs.

The reader will find in M. Chevalier's work, (L'Art de préparer les Chlorures de Chaux, de Soude et de Potasse. Paris, 1829,) all that relates to the applications of those substances in the arts.

Mode of preparing the Chlorurets of Soda and Lime.

Chloruret of Soda. — Dissolve 5 pounds of pure carbonate of soda in 20 livres of distilled water, so that the fluid marks 12 degrees of Baumé's aerometer.

Place the liquor in a vessel, one quarter of which should remain empty. Upon a sand-bath place a four-pint glass balloon, having a long neck and a wide mouth, and introduce into it 576 grammes (18½ ounces) of hydrochlorate of soda and 448 of peroxide of manganese: lute a large curved tube to the mouth of the balloon, and one in S, for the introduction of diluted acid; the first tube being placed in a vessel containing water, serves to mark the gas, and from this vessel a large bent tube proceeds to that which contains the saline solution.

The apparatus thus arranged, and the luting dry, pour into the S tube the cold diluted acid prepared by mixing 576 grammes (19 ounces) of concentrated sulphuric acid with 448 grammes (14 ounces) of water. Heat is then applied to the sand-bath until no more chlorine is disengaged. The process finished, the strength of the product is then to be examined; for this purpose take a portion of the chloruret, introduce it into the bertholimeter, * and pour upon it a solution of the sulphate of indigo made in the following manner: powdered Bengal indigo, 1 part; sulphuric acid, 6 parts: combine them by heat, and add 993 parts of distilled water. The chloruret ought to decompose 18 parts of this sulphate; and should it not do so, additional chlorine must be passed into the saline solution.

Chloruret of Lime.—Slake quick-lime with a small quantity of water: mix the powder with a 20th of its weight of hydrochlorate of soda, and place the whole in long earthenware vessels into which the chlorine passes. This gas is obtained from the same mixture as that for preparing the chloruret of soda. Several sets of apparatus may be placed aside of each other, care being taken that the chlorine passes slowly into each one, in order that the combinations may be effected successively. The hydrated lime being sufficiently charged with chlorine begins to get moist, by

* *Chlorometer* is the synonym of this term, and speaks for its own meaning.—*Tr.*

which it may be known that the operation is about to terminate. In order to try its point of saturation, take one part of the chloruret, and dilute it with 130 parts of water: this solution should decolorize four and a half parts of sulphate of indigo.

The hydrochlorate of soda is added to the lime, for the purpose of facilitating the absorption of the chlorine.

In large establishments, such as hospitals, barracks, prisons, &c., where daily disinfection is necessary, the chloruret may be more economically made by this process: Mix 40 litres (10½ gallons) of water, a pound of sea-salt, and five pounds of fresh-slaked lime: immerse in this fluid to within a few inches of the bottom a tube by which chlorine, disengaged from a mixture of half the proportions before stated for the chloruret of soda, may be conducted. This chloruret will still be more than sufficiently powerful to disinfect wards and putrefied animal matters, and it may therefore be mixed with a sufficient quantity of water, and used as will be directed.

Mode of employing the Chloruret of Lime.

M. Labarraque gives the following directions for the chlorurets:

When a putrefied corpse is to be examined, previously pour 24 litres of water into a bucket, and to this water add a demi-kilogramme of chloruret of lime: then mix them well together.

Let a sheet be completely soaked in the chloruret water in the bucket, and cover the whole corpse with it—the putrid odour will soon cease. If blood or any other fluid has dropped from the body, pour one or two glasses of the chloruretted water on it, and the bad odour ceases.

If the fœtor prevails in passages, staircases, &c., sprinkle a few glasses of the water over them.

The sheet which is wrapped round the corpse should be frequently moistened with the fluid in the bucket,

in order to prevent the reproduction of the putrid smell.

Instances are related of bodies that had been interred three months, and afterwards exhumed, the whole of the fetid odour from which was destroyed by the chloruretted waters, so as to render an anatomical inspection practicable.

The chloruret of lime may also be advantageously used in the disinfection of water-closets, urinaries, ships, stables, work-shops, hospital-wards, &c. In such cases, it is only necessary to dilute the chloruret with 60 times its weight of water, and to sprinkle this solution on the boards, walls, floors, and other surfaces of the building. For this purpose, a broom or watering-pot may be used: a few minutes will complete the disinfecting process.

In sick wards, the solution is to be poured into deep plates placed at various distances under the beds; in which case the infectious odour cannot spread, being destroyed, as it forms, by the continual evolution of chlorine.

It cannot be denied, however, that the odour of chlorine eventually, after long use of it, becomes more insupportable than the foulness it was intended to destroy. This was the case at the Hôtel Dieu at the time of the cholera. The fear of contagion caused the chlorine vapour to be most profusely employed, until it became intolerable. Subsequently, the disease was ascertained to be in no way contagious, and we were glad to dispense with the chlorine, even in the *post mortem* room.

Cases for the employment of the Chloruret of Soda.

It is the chloruret of soda that is chiefly employed on man, and it has been completely successful in all cases where there is general or partial infection of the system. Thus, carbuncle, hospital gangrene, ill-conditioned venereal ulcers, sloughing wounds, &c., have all been found to tend rapidly to cicatrization by

the continued employment of the chloruret with 10 or 15 parts of water. In the numerous patients suffering from cancerous ulceration of the breast and womb that are to be found at the Salpétrière Infirmary, I am in the habit of washing the parts with the chloruret of lime solution. By this means, not only has the fetid smell of the pus and other discharges been repressed, but the sufferings of the patients have been considerably alleviated, sleep frequently following the application of the lotion. It has also been greatly beneficial, in M. Alibert's hands, in the treatment of corrosive tetter, (*herpes exedens;*) and MM. Roche and Cloquet have found it of the first use in bad gangrenous ulcers; in many cases of which M. Jules Cloquet directs the sphacelated limb to be bathed in a solution of the chloruret in 10 or 15 parts of water, at the same time that he administers 25 or 30 drops in a pint of barley-water.

M. Roche has cured porrigo favosa with the solution of this chloruret; and has used the same remedy as a gargle with great success in diphtheritic sore throat, (angine couenneuse;) and I can answer, from my own experience, for the same fact.

M. Sanson has succeeded in cleansing ulcerations of the mouth with caries of the palatine bones with it, and by this means suspended for some time the ravages of the disease.

M. Lagneau uses the chloruret as a wash in spongy and ulcerated gums that exhale an offensive odour.

M. Lisfranc uses it to a great extent in burns and common ulcerations; for this purpose he employs a solution of chloruret of lime marking three degrees of Gay-Lussac's chlorometer.

M. Bouley has employed it with success in veterinary surgery, in the treatment of the carbuncular affections that are so frequently met with in horses.

Antipsoric Solution of Chloruret of Lime.

M. Derheims proposes the following solution for the cure of the itch.

Chloruret of lime	3 onces.
Distilled water	1 livre

Dissolve and filter.

The thighs, legs, and arms to be washed two or three times in the day: the cure is effected in six or eight days.

Preparations of the Chlorurets to sweeten the breath.

M. Chevallier gives the following formula:

Spirituous Solution of Chloruret of Lime.

Dry chloruret of lime .	12 grammes	= 3 gros.
Distilled water	64 grammes	= 2 onces.
Alcohol at 36°	64 grammes	= 2 onces.

Triturate well the chloruret in a glass mortar, and add a portion of the water; leave it to settle, pour off the clear liquid, add more water to the residue, triturate, leave it to settle again, and so on three times. Filter all the decanted fluid, add the given quantity of alcohol and a few drops of some essential oil.

A small quantity in a glass of water will free the mouth from any disagreeable odour—that of tobacco for instance.

Dr. Angelot's Formula.

Chloruret of lime	16 to 30 grains.
Mucilage of ♀	1 once.
Orange-peel syrup	4 gros.

The author of this formula uses it in ulcerations of the gums.

Chloruret of Lime Lozenges to sweeten the breath.

Chloruret of lime	7 gros.
Vanilla sugar	3 gros.
Gum Arabic	5 gros.

Divide into lozenges of 15 to 18 grains each, two or three of which are sufficient for the purpose. They are of a grey colour: if white lozenges are desired, this formula will suffice:

Dry chloruret of lime	24 grains.
Powdered sugar	1 once.
Tragacanth powder	2 grains.

Add water gradually to the chloruret, and leave it to settle: decant, filter, and add sufficient water to dissolve the chloruret. Use this solution to bring the mixture to the consistence of a paste, which is then to be divided into lozenges of 18 or 20 grains each. Scent them with some essential oil. One or two to be taken.

M. Deschamps gives the following formula for the same purposes as the above.

Dry chloruret of lime	2 gros.
Sugar	8 onces.
Starch	1 once.
Tragacanth powder	1 gros.
Carmine	3 grains.

The starch prevents the lozenges from having a yellow tinge. They are each to weigh three grains, and five or six may be taken in two hours.

[For internal administration, Dr. Reid of Dublin, (Transactions of the Dublin Col. of Physicians, vol. v.) has used chloruret of lime with advantage in typhus and dysentery. His formula is,

Solution of chloruret of lime	1 drachm.
Mucilage	2 drachms.
Orange-peel syrup	10 drachms.

which may be taken every third or fourth hour, Or the following injection may be administered in company with, or in lieu of the mixture:

Barley water ..... 10 ounces.
Solution of chloruret of lime .. 4 drachms.

This may be given each morning and evening during the continuance of the typhoid and putrid secretions.

A lotion, composed of 12 ounces of water, with one ounce of solution of chloruret of lime, is applicable for ablution or sponging the body in fevers, and may likewise be used to gangrenous ulcers, both consequent on fevers or other tedious diseases, and idiopathic.

A powder which is efficacious in destroying the yellow colour of the teeth, is made by mixing four grains of chloruret of lime powder with two drachms of powdered gum or red coral.

The chlorurets of calcium and sodium have been extensively and successfully used by M. Lisfranc in the treatment of burns. He says, they act in the first degree of burns by their astringent and sedative effects, for patients after a few hours' use of the chlorurets suffer much less, and often not at all; their reaction on the system is therefore considerably diminished. In the second degree of burns, when as yet no eschar, but only a solution of continuity exists, the chlorurets induce a plastic exudation from the surface, which becomes organized, and forms a false membrane, proceeding from the circumference to the centre, and eventually fills the wound. Nor are these preparations without the same effect on a more advanced stage of burns, when the eschars have come away, and the granulations are well developed. At the same time that there is much less contraction of the cicatrix, after the treatment with the chlorurets, it is more solid than under any other treatment. If however the inflammation be violent, and of a phlegmonous nature, the chlorurets generally augment its intensity, while, on the contrary, if it be slight, they diminish its force, and thus prolong the elimination of the eschars. The chlorurets are more especially applicable to burns of the first and second degree. They are more injurious than otherwise, if used as antiseptics, whenever the gangrene depends upon an excess of inflammation, and

when the latter, notwithstanding the death of a certain extent of tissue, persists to a high degree.

The mode of dressing burns with the chlorurets is as follows: the whole surface of the burn is first covered with a compress perforated in many places: above this a mass of charpie at least two inches thick, and moistened with the chloruret, is placed; and the whole is retained by a bandage. During winter, when the surface of the burn is very extensive, and the patient lies in a state of excessive stupor, the perforated compress should be warmed before it is applied; and according to the temperature of the atmosphere, the apparatus is to be moistened six or eight times a day. The dressing should be renewed every twenty-four hours.

M. Ricord does not consider that the chloruret lozenges are at all effectual in moderating the salivation, and spongy condition of the gums, consequent on the free use of mercury.—*Tr.*]

MANNITE.

This substance has been called *sugar of manna*, but its only point of resemblance to sugar is its saccharine taste. It is usually procured from manna, but appears to exist, though in small quantity, in the juice of onions, beetroot, celery, and many other plants.

To obtain it the manna of commerce (in tears) is treated with boiling alcohol, filtered, and left to crystallize: on cooling, the mannite precipitates in small and beautifully white needles.

Manna in tears is composed almost altogether of mannite combined with a small quantity of yellowish extractive matter, and some traces of cane sugar; whilst common manna contains but little mannite, and a great proportion of extractive.

Mannite is white, soluble in water in almost any