

tion, of a deep leaden hue, which neither time nor treatment can remove. Silver appears to be chiefly eliminated by the intestines and bile, very little escaping by the urine.

The nitrate, in solutions of various strength, is used successfully as an injection in gonorrhœa. Some advocate a very strong solution (twenty grains to the ounce), averring that in many instances the disease may be at once cut short by it; others prefer a much weaker solution of one or two grains to the ounce of water, repeating the injection several times a day.

The solid stick is sometimes applied to strictures of the urethra.

The author believes that a solution of glycerine of tannin, one half the strength of the pharmacopœial preparation, will be found a better injection for both gonorrhœa and gleet than nitrate of silver.

#### MERCURY AND ITS PREPARATIONS.

THE salts of mercury possess very various physical as well as chemical properties; but as in every instance their effect on the system is well-nigh the same, probably all mercury compounds ultimately assume the same form in the blood.

The nitrates of the oxide and suboxide are escharotic; but much of this action is due to the free nitric acid of the salt. They are used to remove warts, condylomata, and other slight excrescences. The annoying itching of some skin affections may be completely allayed by mercurial applications. Solutions of bichloride, black wash, yellow wash, or mercurial ointment, may each prove useful, but the application must be a strong one. Trousseau highly recommends the part to be bathed with a solution of about twelve grains of bichloride in a pint of very warm water. After much experience of these applications, the author believes that an oint-

ment composed of a drachm of calomel to an ounce of lard will be found by far the best application.

But this ointment, in common with other mercurial applications, is not useful in all kinds of itching of the skin; for instance, the irritation of urticaria remains unaffected by it.

Calomel ointment often immediately removes the itching of pruritus ani. This irritation may be due to rashes, as psoriasis, lichen, or eczema, or no eruption may be visible, yet the ointment will prove equally efficacious. Sometimes the itching is felt along the raphé between the anus and scrotum, and may be due to little round spots looking like psoriasis, with the scales washed off. This form also yields to the ointment. Pruritus pudendi is less frequently eased by this application. In obstinate cases of pruritus ani and pruritus pudendi, blisters to the thighs, or the application of a few leeches, sometimes afford relief.

The ointment in many instances improves the rashes themselves, but this is due, in some measure, to the cessation of the scratching on the disappearance of the itching.

Sometimes a little scabbiness of the head, looking like mild eczema, occurs in children, accompanied by a degree of itching sufficient to prevent sleep, and to cause constant restlessness. The calomel ointment speedily appeases this irritation.

The inunction with calomel ointment allays the distressing itching of the scalp sometimes accompanying pityriasis. It may be profitably added to other ointments used for the removal of pityriasis, as oxide of mercury or of tar.

It may be objected that so strong an application of mercury, especially when applied to soft and absorbing parts, as the inner surface of the vulva, and the skin around the anus, must surely produce salivation. No doubt care should be exercised, and no more ointment used than is needed. Yet the risk of salivation seems to be extremely slight; for, with a very large experience of the ointment, the author has never seen salivation produced by it. Properly applied, a very small piece of ointment is generally sufficient to allay the irritation at once, and even to remove it altogether in a few

days, although it is very apt after a variable time to return, when it again yields to a renewed employment of the ointment. Having many times seen it succeed when other remedies have entirely failed, the author is convinced of the value of this application in these harassing and perverse diseases. Its grateful effects are often almost instantaneous; but sometimes it takes a few days to give ease.

The various kinds of lice infesting different parts of the body are destroyed by white precipitate or nitrate of mercury ointment, or by corrosive-sublimate wash. For lice on the pubes it is necessary to apply the ointment or lotion to the scrotum, hair on the perinæum, and around the anus. These applications destroy both the animals and their nits. The nits can be dislodged by washing the hairs with spirits of wine, which dissolves the gluey matter so strongly attaching the nit to the hair. If the lice have produced much rash, it is recommended to cut off the hair. The body louse may be killed by the essential oils, as the oil of rosemary, or by powdered pyrethrum, or by an ointment of staphisagria. Through the groundless fear of inducing salivation, some prefer these to mercurial applications. The under linen should be boiled to destroy any hidden lice.

The irritant ointments of mercury are useful in that obstinate and disfiguring affection, tinea ciliaris. The eyelashes should be cut short, and the ointment, either of nitrate or oxide of mercury, applied night and morning, picking off the scabs before each dressing. It is a common practice to dilute the unguentum hydrargyri nitratis with from four to six parts of simple ointment, whether the application is employed to rashes or to tinea ciliaris. In many instances the undiluted ointment is best, and it seldom happens that it requires to be reduced more than half the officinal strength: the failure of the ointment in eczema psoriasis lichen tinea ciliaris, is often due to its employment in too weak a form. Mr. Hutchinson and others assert that epilation insures the speediest cure. Should these stimulating applications fail, others more powerful should be tried, as nitrate of silver, or

sulphate of copper, the last-named salt being preferable, on account of its giving less pain.

Patches of obstinate lichen and psoriasis, especially of the hands, even when not syphilitic, will sometimes yield to mercury ointment when milder treatment fails. The calomel and nitrate of mercury ointment may be mixed, and tar ointment is sometimes added to them with benefit.

Citrine ointment is also very useful in some cases of eczema, even in the weeping stage if there is but little inflammation. It is especially useful in the stage of desquamation when the skin has healed. It is markedly useful when eczema affects the hairy parts of the face, often curing this obstinate form when other remedies have been tried in vain, and even if it fail to cure it generally in great part subdues the disease. The same ointment is very beneficial too in pityriasis of the hairy parts of the face. In both eczema and pityriasis it is better to mix it with tar ointment, though this combination is sometimes more irritating than the citrine ointment alone; not unfrequently this mixture cannot be borne whilst the citrine ointment pure or diluted proves very useful.

In the early stages of acne a lotion composed of corrosive sublimate, one part; alcohol, enough to dissolve it; water, 100 parts, is said to be of use. A tea-spoonful is to be added to a quarter of a pint of water, and the face sponged with the lotion night and morning. The bichloride lotion, after a time, produces a "scaliness and hardness of the cuticle."

Bichloride of mercury, one of the best parasiticides, is useful in favus, tinea sycosis, tinea tonsurans, eczema marginatum, and pityriasis versicolor (chloasma.) A lotion containing two grains of bichloride to an ounce of water is generally sufficiently strong. In favus and tinea sycosis and tinea tonsurans, the lotion should be applied after each epilation, and should be continued for some time after epilation is discontinued. This treatment is highly spoken of by McCall Anderson.

It is taught, on high authority, that paronychia may be much benefited by the application of mercury ointment, re-

peated for ten minutes every hour, applying poultices at other times. Dr. Scott and Mr. McCormac find nitrate of lead dusted on the diseased tissues night and morning very useful; they both report several striking cases of rapid cures treated on this plan.

Mercurial preparations are used as local applications for chronic inflammation; for instance, Scott's ointment is often employed in chronic inflammation of the knee-joint. Mr. John Marshall has recently introduced a new mercurial preparation, oleate of mercury, varying in strength according to the needs of the case, variously combined with other remedies. Mr. Marshall's paper is so practical and valuable and so unsusceptible of condensation or abridgment that we have deemed it best to reproduce the larger portion of it. These preparations, he says, "are cleanly and economical and have a much greater diffusibility or penetrating power than the old mercurial ointments, for they are absorbed by the skin with remarkable facility, and manifest the remedial effects with great promptitude."

"They should not be rubbed in like ordinary liniments or embrocations, but should be *merely applied with a brush, or be spread lightly over the part with one finger*; otherwise they may cause cutaneous irritation, or even produce a few pustules on the skin, especially in certain persons. This result may, however, be obviated by the addition of a small quantity of olive oil, or purified lard, according as an oleaginous or an unctuous preparation is required. Any of these forms may be scented by the addition of essential oils."

"In employing these mercurial solutions for combating persistent inflammation of joints, I soon found that the addition of morphia was of very great advantage. For this purpose the simple alkaloid must be used, as neither the hydrochlorate, the acetate, nor the meconate is soluble in oleic acid. For every drachm of the solution of oleate of mercury in oleic acid one grain of morphia may be added. Being, as well as the mercury, completely dissolved, it quite as rapidly penetrates the skin, comes quickly into contact with the extremi-

ties of the nerves, and thus, even within a few minutes, acts upon them at their most sensitive points, and speedily produces a soothing effect."

"The oleates of mercury and morphia, thus united in one preparation, represent, as it were, a liniment, ointment, or plaster of mercury and opium; but they are far more elegant, economical, and efficacious. As a rule, according to the size of the part affected, from ten to thirty drops are sufficient for one application. This should be repeated twice daily for four or five days, then at night only for four or five other days, and afterwards every other day, until a cure is obtained. The morphia immediately begins to relieve pain, allays the nervous irritation and consequent vascular turgescence, and thus arrests the progress or 'persistence' of the inflammatory process; whilst the mercury probably promotes the death and degeneration of the morbid products, and so facilitates their subsequent removal by absorption. Unless used in excessive quantity, the oleate of mercury does not salivate, or produce any marked constitutional disorder."

Mr. Marshall says "their applicability and utility appear to me to be almost co-extensive with the occurrence of 'persistent' or chronic inflammations, provided only that the seat of the disease be in, or sufficiently near to, the skin."

"I may first mention that not only in persistent articular inflammation, but also in simple synovitis, these remedies rapidly relieve the tenderness and pain, and promote the absorption of the fluid effused into a joint. They are also of decided benefit in the rheumatic, the arthritic, and the mixed forms of joint disease; but in these they do not, of course, supersede the necessity for general treatment. In inflammation of the mammary gland occurring during or after lactation or altogether independently of that secreting process, their efficacy is unequivocal; for I have seen, not only the induration left after previous abscesses, speedily disappear under their use, but a tendency to recurrent suppuration in the site of old abscesses, and the threatened formation of new ones, entirely controlled and arrested. I have also seen a threat-

ened abscess in the perinæum from inflammation of one of Cowper's glands, and likewise the troublesome indurations left after ordinary perineal abscess, rapidly disappear on the use of these preparations. In obstinate and painful tonsillitis, in epididymitis, in periostitis, and in inflammation with imminent or actual suppuration in or around lymphatic glands, I have similarly employed them with decided advantage. In hydrocele they have not appeared to be useful. I have used equal parts of the 20 per cent. ointment and purified lard applied outside the eyelid, with success, in hordeolum and in palpebral conjunctivitis."

"In many cutaneous affections the oleate of mercury solutions, without morphia, form elegant and powerful remedies. It was in a case of obstinate sycois menti that I first used, and with excellent results, an ethereal solution of the perchloride of mercury mixed with oleic acid; but I now much prefer, as equally efficacious and far less irritating, the five per cent. solution of oleate of mercury in oleic acid, with the addition of an eighth part of ether. This, when applied to the skin with a camel-hair pencil, is a most diffuent and penetrating remedy. It enters the hair-follicles and the sebaceous glands, penetrates the hairs themselves, and carries every where with it its powerful metallic constituent. Besides sycois, it will cure chloasma and the various forms of tinea; it is useful in porrigo and in pruritus ani et pudendi; but I have not found it serviceable in non-specific psoriasis or in eczema. The solution of oleate of mercury destroys pediculi immediately; and, owing to its singular power of permeation, simultaneously kills the ova—a result not always certain when ointments containing undissolved mercury are used."

"Again, in many of those syphilitic affections for the cure of which mercury is applicable, the oleate-of-mercury preparations offer some advantages. Thus, in congenital syphilis, a piece of the 20 per cent. ointment, about the size of a pea or bean, placed in the child's axillæ night and morning for five or six days, rapidly and easily, and without any sign of

uncleanliness, produces constitutional effects. Even in the adult this mode of introducing mercury into the system, either for the cure of syphilis or other disease, may often be preferable to, and less troublesome than, the bath, and it certainly gets rid of the objections to the ordinary mode of inunction. As a topical remedy for certain local manifestations of syphilis, such as the non-ulcerated forms of syphiloderma, especially when these disfigure the head, face, neck, or hands, the 10 per cent. solution is a most valuable adjunct to other treatment, the spots rapidly disappearing under its use. This, or the 20 per cent. preparation, diluted with equal parts of purified lard, may also be applied to non-ulcerated syphilitic indurations and condylomata, but it gives pain if applied to surfaces much excoriated or ulcerated, to moist warts, or to mucous membranes. In syphilitic iritis, and also in non-specific forms of that disease, this diluted oleate ointment smeared over, not within, the eyelids, evidently promotes the absorption of the effused lymph. Lastly, in some of the remoter kinds of syphilitic affections, which iodide of potassium will usually cure, such as very hard nodes and certain forms of syphilitic testicle, the external application of the oleate of mercury is very valuable. I have seen a case of enlarged testicle and epididymis, the syphilitic origin of which had not been suspected, and for which no mercurial course had been prescribed, but which during a period of six years had been, from time to time, relieved by enormous doses of iodide of potassium, speedily and decidedly benefited by the inunction of the 20 per cent. mercurial oleate."

"In reference to other uses of the combined oleates of mercury and morphia, I may remark that I cannot doubt their value in the treatment of 'persistent' inflammation of certain internal parts and organs—as, for example, of obstinate pleurisy, pneumonia, pericarditis, and endocarditis; for they would here also allay pain and nervous irritation, would thus contribute towards the arrest of progressive disease, and would likewise promote the process of absorption. Moreover, I may state that a solution of morphia in oleic acid (one or

two grains to the drachm), without mercury, is an excellent topical remedy in neuralgia, and in that exquisitely painful affection, herpes zoster, care being taken not to produce cutaneous irritation by friction. I have also used, endermically, with advantage, a solution of atropia in oleic acid, and have had prepared for me the oleates of zinc and copper. Each of these preparations will probably come to have its uses, to which, however, I have now only time thus generally to refer, Oleic acid is likewise a ready solvent of cantharidine and croton oil. It is itself aperient, and permeates *faeces* more readily than olive oil. Indeed, I fully anticipate that this acid, as well as its compounds with mercury and with morphia, besides other preparations made by its aid, will eventually be admitted into the Pharmacopœia. An ointment of the oleate of mercury would almost supersede the old-fashioned blue ointment, whilst the solutions of the oleates might replace the liniment of mercury. The remaining mercurial ointments of the Pharmacopœia, of which the nitrate may contain a little oleate or some allied salt, will, however, still have their special uses."

"The oleate must be prepared with the oxide precipitated by caustic potash or soda from a solution of the metal in nitric acid, recently made and well dried. The solution of mercury by oleic acid is assisted by a temperature of 300° Fah."

"The 5 per cent. solution is a perfectly clear pale-yellow liquid, resembling olive oil, but thinner; the 10 per cent. solution is also fluid and perfectly clear, but as dark as linseed oil; whilst the 20 per cent. preparation is an opaque yellowish unctuous substance, closely resembling in appearance resin ointment, melting very readily at the temperature of the body, and forming a kind of transparent, viscid, colourless varnish when applied to the skin. The chief care to be observed in the manufacture of these solutions is not to hurry the process, and not to employ a high temperature, or the mercury will be immediately reduced."

Baths of corrosive sublimate and chloride of ammonium, in

the proportion of half an ounce of sublimate to one ounce of the chloride, are sometimes useful in the treatment of obstinate syphilitic and non-syphilitic rashes.

Goitre is successfully treated with an ointment of biniodide of mercury. It has been largely employed in India with remarkable success. Its action is aided by the effects of the sun's rays, to which the tumour is exposed after inunction. The ointment is prepared in the following way: Melt three pounds of lard or mutton suet, strain, and clean; when nearly cool, add nine drachms of biniodide of mercury, finely triturated; work the mixture well in a mortar till no grains of red are visible, and keep it in pots, protected from the light. In India this ointment is applied to the swelling at sun-rise by means of an ivory spatula, and is then well rubbed in for at least ten minutes. The patient then sits with the goitre held up to the sun as long as he can endure it. In six or eight hours there will probably be some pain from the blistering action of the application, although no pustules will have arisen. At about two o'clock in the afternoon a second application is made, and the ointment is rubbed in with a light hand. The ointment is then allowed to remain, and its absorption is completed about the third day. In ordinary cases one such course cures the patient, but in bad cases it may be necessary to repeat the treatment in six or twelve months. In countries where the sun is less powerful, the patient sits before a fierce fire; or the ointment may be rubbed over the swelling night and morning, afterwards covering it with oilskin. The full effect is produced in a few days when a mild ointment like spermaceti is substituted (Stainthorpe).

Mercurial ointments are useful in erythematous lupus (Moriz Kohn). The author has witnessed great advantage result from the use of calomel ointment in scrofulous and tubercular lupus of children.

In tubercular lupus Nayler advises touching the summit of the tubercle with the solution of acid nitrate of mercury, repeating the application till the tubercles are reduced to the

level of the skin, but not deeper or a scar will result. Each application excites a good deal of inflammation and pain; but the pain may be allayed by covering the spot with collodion. Nayler uses the mercurial vapour bath in general eczema.

Mercurial preparations, especially black-wash, are very useful applications to syphilitic sores. Thus, mucous tubercles soon yield to black-wash. Black-wash is useful too for those elevated indurations occurring at the anus of children, differing from mucous tubercles, being of much larger size, of irregular shape, often limited to one side, and generally extending some way up the rectum. This eruption, which may bleed and smart severely each time a motion passes, often disappears but slowly under the influence of mercury administered by the mouth, and in spite of it may continue increasing slightly for months; while, if kept constantly moist with black wash, the friends may be assured of its removal in ten days or a fortnight. Black-wash is very useful in other syphilitic sores.

When it is not convenient to apply black-wash, calomel or citrine ointment well rubbed in may be substituted.

Calomel dusted over syphilitic condylomata generally removes them.

Cyanide of mercury in solution, in the proportion of ten or fifteen grains of the salt to an ounce of water, is useful as a local application to syphilitic rashes and sores, as those of the throat, tongue, anus, penis, &c. To sores on the prepuce or glands, a weaker solution of five grains to the ounce is generally strong enough, and even this strength sometimes excites a good deal of smarting. It should be well rubbed in with a camel-hair brush, once or at most twice a-day, carefully avoiding the neighbouring healthy tissues. In case of chancres it is a good plan to apply this solution daily, and to keep the sore moist with lint soaked in black wash. Mercurial ointments rubbed into the skin of the penis are often apt to bring out a crop of eczema with considerable swelling.

Mercurial applications mixed with other substances, as tar, are very useful in syphilitic psoriasis.

Mr. Lee strongly recommends mercurial fumigations in the treatment of syphilis. Calomel being undestroyed by heat or moisture, and giving constant results, is to be preferred to other mercurial preparations. Some employ dry fumigation; others maintain that the therapeutic effects of mercury are increased by steam. This mode of administering mercury is considered the best and surest way of eradicating syphilis. Moreover, it affects the general health less deleteriously, disturbing neither the functions of the stomach nor the intestines. Ten to twenty grains of calomel are used at each fumigation. The fumigations often produce a good deal of weakness and prostration, so that in many cases they cannot be continued. There can be no doubt that many cases of syphilis, rebellious to other treatment, yield to these fumigations. Sometimes only a portion of the body affected with syphilitic rashes is subjected to calomel fumigations.

Mercurial applications, but especially the mercurial and calomel ointments, are rubbed into delicate parts of the skin, to obtain their absorption and to mercurialize the system. This method of inunction has the advantage of not disordering the digestive canal, but it has the disadvantage of uncleanness.

Bichloride of mercury has been injected under the skin, and a much smaller quantity affects the system than when administered by the mouth. This painful mode of treating syphilis is not likely to become general.

At one time the application to the face of mercurial ointment or of mercurial plaster was in vogue to prevent the pitting of smallpox.

It is a question of interest, whether the mercury itself plays any part in arresting the maturation of the pustules, or whether other applications are not as effective. A good deal has been said on each side of this question, but the author thinks that other safer remedies may be used, if not with equal benefit, yet with sufficiently good results to render it desirable to employ them in preference to the mercurial compounds, for several instances of very severe salivation have followed their employment in smallpox.

The exclusion of light and air probably thwarts the development of the pustules and prevents pitting. The exclusion of air and light can be perfectly effected by collodion and india-rubber dissolved in chloroform. This, or other means, should therefore be employed in preference to mercury compounds. (*Vide* Nitrate of Silver.)

In non-syphilitic ozæna, Trousseau employs the following snuff-powders—White precipitate, 4 grains, sugar in fine powder, 232 grains; or red precipitate, 4 grains, sugar in fine powder, 232 grains. The nose is first cleared by blowing it strongly, and then a pinch of either of these powders is snuffed up a few times daily for a few days. These powders sometimes produce a rather powerful irritating effect on the mucous membrane. They quickly remove the stench, and modify the state of the mucous membrane, but unfortunately do not cure this very intractable complaint, as after a variable time the discharge usually recurs.

In the syphilitic ozæna of children, mercurial ointments, as nitrate of mercury ointment, partially melted, applied twice a day after the nose has been well cleared, will arrest the secretion, remove the obstruction, and improve the condition of the mucous membrane.

The child's health consequently improves, for the nasal obstruction prevents sucking during which the child is unable to breathe. It is well known that a child, especially in sleep, breathes only through the nose; consequently when the nasal passages are blocked the health must suffer through inability to sleep.

Mercurial medicines, if administered at an undue time, seriously affect the mucous membrane of the mouth and salivary glands. The first symptom is a disagreeable metallic taste; the gums become swollen and tender, of a dark-red colour around the teeth; the mucous membrane investing the incisor teeth being the first affected, whence the inflammation spreads; the tongue swells, the breath is excessively fetid, the secretion from the buccal mucous membrane is augmented, and the saliva is increased in

quantity even to the extent of one or two pints daily. At first the saliva is richer than natural in epithelium and solid constituents, but after a time becomes clearer, more watery, and contains fat and mucous corpuscles. The salivary glands become swollen and painful; at last the inflammation of the mouth reaches such a point that ulceration sets in, and progresses till large portions of the gums and cheeks may be destroyed, the teeth becoming loose, and the bones of the jaw carious. Some are much more prone to become salivated than others; weak people are more easily affected than strong. Children are rarely salivated. Disease, too, influences the operation of mercury; for in inflammation it is often well borne, while in granular disease of the kidneys or scrofula, patients are very liable to become salivated. It is stated that salivation has occurred three hours after a dose of mercury, that it may last a few hours only, or endure for several years, and even disappear for a time and then return.

The influence of mercurial preparations on tonsillitis in certain conditions is most marked, owing probably to its absorption into the circulation. In quinsy or scarlatina, when the tonsils are so enlarged as almost to meet, and when the difficulty in swallowing is nearly insuperable, with even danger of suffocation, if at such a crisis a third of a grain of grey powder is taken every hour, it greatly reduces the swelling in a few hours, and obviates the distress and danger; and, even if an abscess has formed, its maturation and evacuation appear to be effected more quickly.

The same powder, administered in the same dose three or four times daily, is useful in mumps, speedily relieving the swelling and pain of this affection. Probably, as in the last case, the drug acts only after its absorption.

The soluble preparations of mercury combine with the albuminous matters in the mouth, and any portion left uncombined attacks the mucous membrane, and may excite in it acute inflammation.

They act in a similar manner in the stomach.

A form of vomiting is sometimes met with in very young