

other purgatives are rejected by the stomach; it is free from taste, and may therefore be given easily to children. When it operates, nausea and tormina may be experienced. One grain of calomel at night will act in the morning, and not unfrequently a half-grain will give satisfactory results. A full purgative dose of calomel (five grains) is an excellent *vermifuge* for the *lumbricoid worms*. It may be given with santonine. At the onset of *acute febrile diseases*, calomel is a useful purgative; it hastens waste, and causes the elimination of the products by the intestine.

Mercurials were formerly much esteemed in the treatment of *acute inflammation*, especially of serous membranes. As calomel—the mercurial preparation usually employed—was combined with opium, it was not known to which remedy the good results were due, but the mercurial was considered to have the larger share of merit. It is now admitted that opium was the effective agent. An apparent exception to this statement exists in the case of *iritis*, a disease in which the good effects of mercury are most conspicuous; but *iritis*, probably, is always of syphilitic origin, and, in *syphilitic inflammation of serous membranes*, it is not disputed that mercurials are extremely efficacious. In these days, however, although opium is considered indispensable in peritonitis, pleuritis, pericarditis, etc., mercury is no longer combined with it. No longer is it considered necessary to “touch the gums” in order to cure a serous inflammation, and only the most prejudiced and benighted practitioners insist in the use of mercurials in these inflammatory affections.

Large doses of calomel—five grains every four hours—are said to be very efficacious in *true croup or membranous laryngitis*. It is claimed that it allays spasm and checks the formation of the false membrane. The author is skeptical in regard to the utility of calomel in this affection. There is, however, no doubt as to the value of the yellow subsulphate (turpeth mineral) as an emetic in this disease. If given early, it is the doubtful statement of Dr. Fordyce Barker, of New York, that a fatal result will most certainly be averted. From two to four grains of the subsulphate may be given as an emetic for a child with croup. Serious results might be produced by this dose if emesis did not so promptly follow. The powder comes up with the contents of the stomach, in from five to fifteen minutes after being swallowed. But little depression follows the emesis produced by turpeth mineral, in which respect it has a decided advantage over sulphate of copper, tartar-emetic, and even ipecacuanha. As it is insoluble, this remedy should be rubbed up with sugar and placed on the base of the tongue.

Corrosive sublimate has lately been used with very distinct advantage in the treatment of *diphtheria*. Its remarkable germicide property is the motive for its employment, and clinical experience strongly

supports the results of experiment. The dose administered in the treatment of diphtheria will range, according to the age of the subject, from $\frac{1}{10}$ grain to $\frac{1}{5}$ grain every four or six hours.

Liebermeister, following the lead of Traube, Wunderlich, and others, has obtained surprising results from the use of calomel in *typhoid fever*. By our German *confrères* this treatment is called the *specific treatment* of abdominal typhus. It consists in the administration of ten grains of calomel in a single dose the first day, and eight grains a day for three or four days thereafter. It is a curious fact that these large doses of calomel have an antipyretic effect. According to the statistics of Liebermeister, the “specific” calomel treatment shortens the duration and lessens the mortality from typhoid fever, as compared with the non-specific, expectant, or other plans of medication.

Calomel is one of the numerous remedies used in the treatment of *cholera Asiatica*. Two methods are pursued: large doses at considerable intervals; small doses frequently repeated. The latter method is nowadays much more usually practiced. It consists in giving every fifteen minutes, half-hour, or hour, the one sixth, one half, or one grain of calomel, combined with opium, chalk, piperine, etc. The author, who has had considerable experience in the treatment of cholera, can not express any degree of confidence in the efficacy of this treatment. Large doses (a scruple to a drachm) sometimes appear to arrest vomiting when other means fail, but there is danger of excessive ptyalism when reaction sets in.

The most important application of mercury therapeutically is in the treatment of *syphilis*. It may be regarded as a specific in this disease. The reaction which set in against its use a few years ago has certainly led to important modifications in the mode and quantity in which mercury should be given; but the fact has been conclusively established that mercury in a certain sense is antidotal to syphilis. As mercury arrests the proliferation of the syphilitic virus in the blood, this agent should be used with the earliest manifestations of the specific character of the infecting sore. Mercury is not indicated in chancroid, or non-infecting chancre, and should not be used. If the chancre have the characteristic quality of the infecting sore, small doses of one of the mercurial preparations should be begun and continued steadily until all induration has disappeared. The important point is, not to induce ptyalism. It is now conceded that the danger of a relapse will be very much lessened by continuing the mercurial treatment for some time—for several months—after local manifestations have ceased. The ill effects of a mercurial course may be prevented by the use of small doses, by careful attention to hygiene, and by lessening the dose, or discontinuing the remedy entirely, whenever soreness of the jaws can be developed by smartly closing the teeth. By the adoption of these precautions, a mercurial course may be continued without im-

portant interruptions until the period of incubation has entirely passed, and through the so-called secondary or constitutional stage.

Various methods are resorted to for the introduction of mercury into the organism :

1. *Inunction.*—Before practicing inunction, the patient should take a warm bath, or, at least, wash the part to be operated on with soap and water. From fifteen to thirty grains of mercurial ointment is the quantity required for each inunction. The oleate of mercury in proportion of fifteen to thirty per cent in the solution may be substituted for the ointment, but the oleate is to be applied with a brush, and not be rubbed in. Sigmund, the great advocate for the inunction method, has prescribed certain rules, which should be followed. The ointment should be rubbed in with moderate friction by the palm of the hand : on the first day on the legs ; on the second day on the thighs ; on the third day on the abdomen and sides of the chest ; on the fourth day on the back ; on the fifth day on the arms. Mercurial inunctions are not borne equally well by all patients. Some are easily salivated, and others suffer from eczema or erythema. Moreover, the inunction treatment is filthy and troublesome, and it should, therefore, be restricted to those cases in which mercurials are badly borne by the stomach.

2. *Fumigation.*—Various mercurial preparations may be used—the sulphuret, the iodide—but calomel is the best. The apparatus consists of a spirit-lamp, a plate to hold the calomel, surrounded by a shallow vessel containing water, a blanket large enough to cover the patient and the apparatus. The calomel is volatilized by the heat of the lamp, and is deposited, together with the vapor of water, on the skin of the patient. About fifteen minutes is the time required for the bath, and the quantity of calomel used ranges from eight to fifteen grains. The method of fumigation is especially adapted to cases of the constitutional, or secondary, and to the tertiary, with ulcerations, when the state of the patient is such as to forbid the internal administration of mercurials.

3. *Hypodermatic Method.*—This consists in the introduction under the skin of corrosive chloride, or albuminate of mercury. ℞ Hydrarg. chlor. cor., gr. j; glycerini, ʒ j; aquæ destil., ʒ j. M. Sig.: *Ten minims a dose once a day.* This method is cleanly, quick in results, and more successful than any other in preventing relapses.

The peptonate of mercury, as advocated by Bamberger, has been much employed lately for the treatment of syphilis by the subcutaneous method ; but the albuminate alone, without pepsin, is both more effective and less likely to set up local inflammation. The following formula for the preparation of albuminate of mercury, recommended by Gourgues, is probably the best now available for this purpose : Bichloride of mercury, gr. xv ; distilled water, ʒ v. To this solution is added five drachms of white of egg, and, after thorough shaking,

the mixture is incorporated with the following : Chloride of sodium (common salt), gr. xxx ; distilled water, f ʒ ij. This mixture is then well agitated, and afterward filtered, after which sufficient distilled water is added to make the solution up to four fluid ounces. The dose of this solution for hypodermatic injection is from ℥ xv—ʒ ss. When finished, the solution is not clear, but rather semi-transparent ; but it remains longer and better in solution than most of these preparations. The peptonate of mercury is not only variable in composition, but easily undergoes change, and is liable to produce violent local irritation. The albuminate prepared as above suggested is readily administered, is not painful, and is rarely followed by unpleasant accidents at the site of the injection. As regards the results of the administration on the progress of the disease, they are remarkable (Gourgues). According to Martineau, the hypodermatic mercurial treatment exercises on syphilis in its various manifestations an action much more effective, more energetic, and more rapid, than any other method hitherto proposed. The subcutaneous areolar tissue of the back is the best place for the injections. The number of them and the quantity of fluid used will depend on the stage of the disease, the severity of the manifestations, and the condition of the patient.

Besides the preparations above mentioned, other solutions of corrosive chloride have been proposed. Matthès recommends the following : Bichloride of mercury, gr. xv ; chloride of sodium, gr. xxx ; distilled water, f ʒ iij. Make a solution. Matthès had observed the action of this during two years at Auspitz's polyclinic. The usual dose was a Pravaz syringeful—fifteen to twenty minims—every two days. No irritation is produced beyond some tumefaction, and, in general, twenty to thirty injections sufficed to effect a cure.

Recently, Liebreich has brought forward the *formamide of mercury* as the most suitable preparation for the hypodermatic method. It is neutral in reaction, readily soluble in water, and does not coagulate albumen.

4. *Internal.*—This method, in the nature of things, must be most frequently resorted to. Various mercurial preparations are used by different syphilographers. The Ricord school prefer the green iodide ; Sigmund, mercurial-ointment inunctions ; Foerster, the yellow iodide ; Berkeley Hill, the red iodide ; Tilbury Fox, the cyanide ; Bumstead advises mercurial pill, the green iodide, the bichloride, according to circumstances, but his preference is for the use of calomel by fumigation. That preparation of mercury is to be preferred which best agrees with the patient, is the rule.

The indications for the use of iodine preparations have already been stated, but it may be useful, now, to place in juxtaposition the comparative utility of mercury and iodine : mercury for the primary infecting sore ; mercury for the affections of the skin, especially macular

and papular exanthemata; iodine for the tertiary symptoms: gummata; tubercular syphilides; serpiginous ulcers; affections of the bones and periosteum, and nervous diseases.

Hydrargyrum cum creta is usually preferred for the treatment of congenital syphilis. Mr. Marshall recommends the twenty-per-cent ointment (the size of a pea) of the oleate of mercury, to be placed in the axilla night and morning for five or six days.

Local Uses of Mercurials.—Recent experimental investigations on the action and comparative germicide properties of the various antiseptics have shown the superiority of corrosive sublimate over all others; hence it has come to be largely used in the dressing of wounds, and as a local application to specific ulcerations, etc. The acid nitrate of mercury is one of the best caustics for the destruction of chancroid. It should be applied with a glass rod after the surface of the sore has been well cleansed. It is now conceded that destruction of an infecting chancre does not prevent systemic infection. Syphilitic warts and vegetations on the genitals are amenable to the same treatment. Erosions and ulcerated indurations are best treated by "black-wash" (calomel, eight grains—lime-water, one ounce), or "yellow-wash" (one grain of corrosive sublimate to an ounce or two of lime-water). The surface of the sore may be kept wet with these lotions.

Ricord's treatment of condylomata consists in washing them with a solution of chlorinated soda, and then dusting them with calomel. Mercurial applications are of very great service in cutaneous affections of syphilitic origin. A drachm of calomel to an ounce of lard makes an ointment which is very serviceable in herpes, psoriasis, and pruritus of the vulva and anus. Ringer speaks of calomel-ointment in terms of great praise in various itching affections, especially of the anus and perinaeum. In acne, lotions containing corrosive sublimate, and ointments of green and red iodide, are much employed: ℞ Hydrarg. chlor. cor., ℥j; glycerini, ℥ss; spts. vini rect., ℥vij; spts. rosmar., ℥iv. M. For acne and pityriasis of the scalp: ℞ Hydrarg. iod. virid., gr. x; adipis, ℥j. M. ℞ Hydrarg. iod. rubri, gr. v; adipis, ℥j. M. For acne indurata. The following is Startin's lotion of corrosive sublimate for syphilitic eruptions: ℞ Hydrarg. chlor. cor., gr. iv; acid. nitric. dil., ℥j; acid. hydrocyan. dil., ℥j; glycerini, ℥ij; aquæ, ℥viii. M. For pityriasis, chloasma, etc.

Lotions of corrosive sublimate are much employed in the treatment of parasitic skin-affections. The stronger ones must be used with caution. It is rarely necessary to use a lotion stronger than two grains to the ounce. The following is an excellent formula of Tilbury Fox: ℞ Hydrarg. chlor. cor., grs. iv; alcohol, ℥vj; ammoniæ muriat., ℥ss; aquæ rosæ, q. s. ad ℥vj. M. For scabies, ptheiriasis, and tinea versicolor. A scruple of corrosive sublimate to the ounce of simple oint-

ment is an effective application in favus and tinea tonsurans, when used in the early stages of these affections.

Calomel finely levigated and dusted over the membrane by means of a camel's-hair brush is an excellent local application in phlyctenular ophthalmia. Eczema of the margin of the eyelids is quickly cured by rubbing in every night, after detaching the scales, a small quantity of the brown citrine-ointment. Chronic inflammation of the external auditory meatus is cured by the same application, viz., by allowing a small quantity of the brown citrine-ointment to remain in contact with the integument.

Mr. Marshall strongly recommends the oleates in parasitic skin-diseases. He employs a five-per-cent solution of oleate of mercury in oleic acid, adding an eighth part of ether. This is applied by means of a camel's-hair brush. It is used in sycosis, tinea, and chloasma, porriigo, pruritus ani, and pruritus pudendi. The oleates are extremely serviceable remedies for the local treatment of syphilitic induration, but they are not advisable when ulceration exists.

The oleate of mercury and morphia (obtained by the addition of the alkaloid morphia) is an elegant and efficient application in superficial inflammations, especially of joints of the rheumatic and arthritic varieties. Inflammatory indurations, left after the subsidence of acute trouble, are removed by the same combination. For application to these purposes Mr. Marshall employs a five-per-cent, ten-per-cent, and twenty-per-cent solution of oleate of mercury in oleic acid. To every drachm of such solution he adds one grain of morphia.

Mr. C. Bader, the eminent ophthalmologist of London, advises the following ointment in conjunctivitis: ℞ Hydrargyri oxidi rubri, gr. x; atropiæ sulph., gr. j; vaselin., ℥j. M. Dr. Seely, of Cincinnati, strongly urges the use of an ointment of the yellow oxide, eight or ten grains to the ounce of vaseline. He directs that the yellow oxide be triturated to the utmost degree of fineness, and then thoroughly incorporated with the vaseline, the result being a bright-yellow ointment. A portion of this is taken on a probe, the lid lifted up, and the whole is wiped off on the mucous membrane.

For pruritus of the vulva, the following lotion is recommended: Hydrarg. chlor. cor., one part; alum, 20 parts; starch, 100 parts; and water, 2,500 parts. The official ointment of the red iodide of mercury is an effective application in simple hypertrophy of the thyroid gland, and an enlarged spleen, or ague-cake. A bit of ointment, the size of a large pea, is thoroughly rubbed in over the affected organ, the sun's rays falling on the part if practicable, or the friction may be carried on before a bright fire, or without. As soon as the skin becomes sore the applications are suspended until it recovers, when they may be resumed. The applications should be made daily.

For that parasitic affection of the skin, pityriasis, there is no lotion

so effective as a strong solution of corrosive sublimate— $\mathcal{D}j-3j-\frac{3}{4}iv$ of rose-water. It need hardly be observed that these strong solutions require very careful handling. Less than necessary will fail, and application to an abraded surface will induce toxic symptoms.

Aurum.—Gold. *Or*, Fr.; *Gold*, Ger.

Auri Chloridum.—Chloride of gold. (Not official.) Needle-shaped prisms of a beautiful yellow color, deliquescent, freely soluble in water. Dose, gr. $\frac{1}{30}$ —gr. $\frac{1}{15}$.

Auri et Sodii Chloridum.—Chloride of gold and sodium. An orange-colored salt, crystallizing in four-sided prisms, soluble in water. Dose, gr. $\frac{1}{20}$ —gr. $\frac{1}{10}$.

ANTAGONISTS AND INCOMPATIBLES.—Eggs, albumen, milk, flour, are chemical antidotes. The contents of the stomach should, of course, be evacuated. The principles of treatment are the same as for poisoning by corrosive sublimate.

SYNERGISTS.—The salts of mercury, especially the corrosive chloride, are very similar in action to the chlorides of gold, and are therefore synergistic.

PHYSIOLOGICAL ACTION.—The chloride of gold is a caustic in its local action. In toxic dose it excites violent gastro-enteritis, accompanied by such nervous phenomena as cramps, convulsive trembling, insomnia, priapism, insensibility, etc. In small medicinal doses these auric preparations promote the appetite and the digestive capacity. If long continued, especially if the dose be a full medicinal one, epigastric pain and distress are excited, nausea is induced, and loss of appetite follows. Constipation is usually produced by the preparations of gold, and this, notwithstanding an increased secretion of the intestinal glandular apparatus is one of the results of their administration. These preparations do not probably entirely enter the blood from the stomach, but part passes to the intestinal canal, is there decomposed, and is absorbed as oxide in combination with albumen. This is, however, conjectural. They are readily soluble and are very diffusible substances. What particular influence they exert on the composition and function of the blood is at present quite unknown. A form of fever, known as *auric fever*, is caused by their prolonged administration. This fever is accompanied by profuse sweats, a very abundant flow of urine, and increased salivary secretion. The salivation caused by the preparations of gold differs from the mercurial in that there is no tenderness nor ulceration of the gums.

Peculiar effects on the mental state are produced by the administration of the auric preparations. The functions of the mind become more active, and even excited, and a state of cheerfulness is induced. In men, marked aphrodisiac effects are produced, and the erections are

often painful; in women, increased venereal desires and augmentation of the menstrual flow are observed.

The elimination of the auric preparations takes place by the liver, the intestinal canal, but chiefly by the kidneys. The urine assumes a bright-yellow color.

Prolonged administration of medicinal doses induces epigastric heat and oppression, headache, dryness of the throat and mouth, gastrointestinal irritation, fever.

THERAPY.—The chloride of gold and sodium in small doses ($\frac{1}{20}$ grain), three times a day, will relieve *nervous dyspepsia*. A red and glazed tongue, epigastric pain, increased by taking food, and a tendency to relaxation of the bowels after eating, are indications for the use of this salt. *Catarrh of the duodenum, catarrh of the bile-ducts, and jaundice* dependent thereon, are symptoms which may usually be removed by the salts of gold.

These preparations are employed chiefly in the treatment of *syphilis, secondary and tertiary*. They are indicated in the same cases in which corrosive sublimate is found effective. According to the author's experience, they are especially adapted to old cases in which a protracted mercurial course and the large use of the iodide of potassium have failed to remove long-standing tertiary symptoms. He has found them very serviceable in recurring *syphilitic ulcerations of the throat, syphilitic ozaena, syphiloma of bones, syphilitic phthisis, etc.*

Amenorrhœa, dependent on torpor of the ovaries, may be removed by the persistent use of auric preparations. *Chronic metritis*, with scanty menstruation, is often remarkably benefited by them. *Sterility*, dependent on these states, or due to coldness, is more certainly cured by these agents than by any other merely medicinal means. It is said by Martini that the tendency to *habitual abortion* may be averted by the use of chloride of gold. This authority has also found that *dropsy of the ovary* may be sometimes cured by the same agent.

Decline of the sexual power in man may be prevented by the use of gold salts, and the following are symptoms which may be removed sometimes by them: *diurnal seminal losses, weak and inefficient erections, inability for the sexual congress, due to irritability of the sexual organs*. They increase the frequency of the nocturnal losses in those who are suffering from plethora of these organs. Cases that are benefited by the bromide of potassium are increased by the chloride of gold, and *vice versa*.

The author calls especial attention to the use of the salts of gold in *chronic Bright's disease, granular and fibroid kidney, and the so-called depurative disease*. He has observed remarkable improvement to follow the persistent use of the chlorides of gold in these affections. They are best given in pill-form, and in small doses, $\frac{1}{20}$ — $\frac{1}{30}$ of a grain three times a day. It need hardly be mentioned that these preparations are