

Vaccine constitutes, with hygienic means of isolation, the only prophylactic treatment of variola; all others are illusory, and even dangerous.³ The hygienic measures comprise an aggregate of means for the isolation of the patient—means especially necessary in our hospitals—and you see to-day the good effects of this isolation, thanks to the measures, incomplete it is true, which have been adopted by the Board of Public Charities, and the Prefecture of Police, which have put at our disposal certain isolated barracks and special vehicles for the transportation of small-pox patients.

We know at the present day almost with certainty the mode in which the contagion of small-pox is received into the system, namely by the respiratory passages,⁴ in most cases, if we can rely on the experiments of Zulzer on animals. Brouardel had in fact previously shown us by examination of the air of small-pox wards, that this atmosphere was charged with numerous particles coming from desiccated variola pustules, and it is by the penetration of these particles into the respiratory passages that small-pox virus enters the blood. From these experiments, too, we may conclude that at the period of desiccation

Under these two forms the Academy of Medicine exports human vaccine, the tubes being much preferable to the glass plates.

Ivory points.—Instead of glass plates you may make use of ivory points about as thick as playing cards. These ivory points covered with vaccine, are passed back and forth over scarifications made in the skin, being previously moistened with a drop of warm water.

Animal vaccine is much more difficult of preservation; in Italy they make use of powdered crusts, kept in stoppered tubes, and vaccine paste.

[In this country animal vaccine comes to us from the dealers in this commodity chiefly in the form of ivory points, capillary tubes and scabs. The ivory points and the tubes are alone to be relied upon. The use of scabs is a filthy method, and does not seem to be wholly unattended with the risk of septicaemia. Personally, I like very much the lymph that is one remove from the heifer. A healthy child, known to be free from tuberculosis, syphilis, etc., of good parentage, is selected and vaccinated with matter from the cow. If the vaccine "takes," on the day that the watery lymph exudes from the papule, quills or ivory points are charged with this virus. Enough in that way to vaccinate thirty or forty persons can be obtained. This humanized matter is much milder than the animal vaccine, and seems to afford equal protection.—TRANS.]

³ Théodore Ruth, of Enten, has instituted the use of vinegar as a prophylactic means in the treatment of small-pox; his method consists in the administration for fifteen days of a couple of tablespoofuls several times a day of vinegar, pure or with water. He also employs the aromatic vinegar which has besides acetic acid, camphor, garlic, lavender and nutmeg.

Roth has by this treatment in a hundred and six cases saved his small-pox patients. According to him, the origin of the name of aromatic vinegar (*quatre voleurs*) comes from the circumstance that at Madrid certain thieves (*voleurs*) were preserved from the epidemic by employing this vinegar. (a)

⁴ Zulzer has studied in the monkey the modes of transmission of small-pox. According to his experiments, it results that the blood of the victims of small-pox is infectious, that the infection is not communicated through the digestive apparatus nor through the unbroken skin, but almost exclusively through the air of respiration. (b)

(a) Deutsch. Klin. No. 40, Oct. 5, 1872.

(b) Zulzer, On the etiology of variola. (Centrbl., 1874, No. 6, 1884.)

of the eruption we should redouble our efforts to prevent the dissemination of contagion. Unhappily, this is the period of the disease when the medical attendant finds himself most impotent, and till persons convalescent from small-pox shall be restrained by stringent legal enactments, we shall find it hard to prevent them from going abroad and carrying with them wherever they go, the contagious elements of the disease.

As for the treatment proper of small-pox I shall have little to say; during the invasion we can in some cases favor determination of blood towards the skin by means of sudorifics, and especially the spirits of *mindererus*.¹ You will often have to combat the pain in the back, and the obstinate constipation, symptoms of the first stage. You can generally remedy the first by means of certain liniments (such as chloroform and spirits of turpentine of each one part, and liquid opodeldoc eight parts); the constipation can generally be overcome by mild purgatives. Next comes the eruption; if it is discrete, if moreover the subject has been vaccinated, no active interference will be required; not so if the eruption be confluent, and all your efforts will be required, especially if your patient be a young female, to prevent the eruption from following its course, and causing disfiguring cicatrices. For this end, various means have been proposed.² Mercurial preparations, and in particular Napolitan ointment

¹ Delioux, of Savignac, employs in the first stage of small-pox and to favor eruption acetate of ammonia under the following formula:

1. Take of acetate of ammonia..... 15 parts.
peppermint water,
orange flower water,
balm water, each..... 30 parts.
syrup of ether,
syrup of maiden hair, each..... 30 parts.

M. Sig. A tablespoonful every hour.

[Instead of this formula the ordinary (3 ij) dose of spirits of *mindereras* with a few drops of Hoffman's anodyne would answer the purpose equally as well.—TRANS.]

To sooth the pains in the back he rubs on the following liniment:

2. Take of chloroform,
spirits of turpentine, each..... 1 part.
opodeldoc..... 8 parts.

M. Fiat linimentum.

² Zimmermann was the first to call attention to the property of *emplastrum de vigo cum mercurio*, of arresting the evolution of the small-pox pustules, and his trials were repeated by Serres in 1835. Serres made use of mercurial plaster cut up in little strips with which he completely covered the face of the patient.

Briquet employs mercurial ointment mixed with starch in the following proportions:

- B Mercurial ointment..... 2 parts.
Powdered starch..... 1 part.

M.

And with this ointment he makes a coating over the face two millimetres in thickness; this coating to be kept always unbroken.

Valleix thinks that this mixture is too thin, and adds equal parts of the ointment and

and the emplastrum de vigo have the curious property of preventing the development of these pustules, and this abortive power has been utilized by covering the face of the patient with masks made of these preparations. Aran and Delioux, of Savignac, have proposed to substitute for these ointments a collodion made with corrosive sublimate;³ unfortunately, this collodion, however elastic it may be supposed to be, yields readily to the distension of the skin attending the eruption, and notwithstanding the real advantages of this method, I have had to abandon it and return to the primitive process of Zimmerman.

This is my mode of procedure: I apply thickly over the face the emplastrum de vigo cum mercurio, and over the whole I dust starch powder, and I take care, by new layers of pomade and starch, to fill in all the fissures and

starch. In order that these dressings may have an abortive action, they must be applied from the very first day of the eruption.

Revilliod, of Geneva, applies as abortive treatment of the pustules of the face, the following mixture:

Take of Napolitan ointment.....	5 parts.
soap.....	2½ "
Glycerine.....	1 "

Mix.

This mixture should be applied before the transformation of the pustules into vesicles. Other topical agents have been proposed. Robert Graves made use of gutta percha.

Schwimmer, of Bonda Pesth, employs to prevent the cicatrices, the following mixture, with which he makes masks which are applied to the skin and members:

Take of phenic acid.....	1 part.
olive oil.....	8 parts.
Prepared chalk.....	12 parts.

Mix.

This mixture is employed in the form of a soft paste spread on strips of linen.

Zulzer proposes to treat locally the variolic pustules by a slight compression. Under the influence of this compression, he says, the pustules dry up with exceeding rapidity and the fever diminishes. (a)

³ Delioux, of Savignac, employs a mercurial collodion with the following formula:

	GRMS.
Take of corrosive sublimate.....	0.30
Venice turpentine.....	1.50
collodion.....	30.00

M.

This collodion is applied by a camel's hair pencil all over the face (b)

(a) Zimmermann, Traité de l'expérience, t. II.—Serres; voir Gariel, Recherches sur quelques points de la variole (thèse de Paris, 1837).—Briquet, Mémoire sur l'emploi des topiques mercuriels (Arch. gén. de méd., 1838).—Valleix, Leçons cliniques (Un. med., 8 février 1853).—Révilliod, Variole. Traitement abortif des pustules de la face (Journ. de pharm. et de chim., avril 1873, p. 523).—Aran, Soc. méd. des hôp., 25 septembre 1860.—Dujardin-Beaumetz, Soc. méd. des hôp., 1872.—Robert Graves, Bull. gén. de théér., 30 septembre 1852.—Schwimmer, Zur Therapie der Variola von Standpunkte der Micrococcus-Lehre (Deuts. Arch. f. Klin. Med., Bd. XXV, Heft 2 et 3, p. 178).—Zulzer, Zur Pathogenese und Mechanischen therapie dar Variola (Bert. Klin. Woch., 1874, 22 juin, No. 25).

(b) Delioux of Savignac, On the abortive treatment of small-pox pustules, (Bull. de Ther., 1845, t. xcviij.

broken places which may afterwards appear in this mask. You will in this way succeed when, be it understood, you have applied this protective mask at the very commencement of the eruption, in causing the pustules on the face to abort, save only those around the lips and mouth, where the incessant muscular movements will be likely to cause the mask to break. In certain cases you may employ the ectrotic method of Serres and Velpeau; a method which consists in opening each vesicle and cauterizing it with nitrate of silver. This process, which cannot be applied to confluent eruptions, ought to be reserved for the pustules which develop on certain points, and in particular on the cornea. As you well know, these pustules may, in their ulterior progress, perforate the cornea and destroy the eye. I have myself seen several instances of total blindness, due to the negligence of the attending physician, who did not interfere in time.

On the part of the mucous membranes, your attention ought especially to be directed to the buccal cavity, where the eruption causes profuse salivation and a painful swelling of the isthmus of the fauces; gargles of Vichy water and chlorate of potassium often relieve these symptoms.

The fever has abated, the general symptoms have improved, and we come to the period of suppuration in patients who have not been vaccinated. Then there is reawakening of the fever, and the grave symptoms appear, in particular the swelling of the hands and the feet. It is to this suppurative period that the efforts of therapeutists have especially been directed. It constitutes the most critical stage of the disease, and it is at this period, more than at any other time, that patients succumb.

Earnest endeavors have, above all, been made to avoid the putrid infection which results from incessant contact of the denuded derm with the pus which bathes it on all sides, and various antiseptic preparations have been used. Chauffard¹ thought that he had found in phenic acid an abortive and curative treatment for confluent variola; Guipon, on the same principle, proposed perchloride of iron;² and Jenna, of Buenos Ayres, spirits of turpentine.³ All these medications have been abandoned, and the profession has returned to local treatment, and in particular to baths and lotions of disinfectant sub-

¹ Chauffard has employed crystallized carbolic acid in the treatment of the secondary fever of suppuration of grave confluent small-pox, and he has seen, under the influence of this treatment, the febrile symptoms diminish as well as the suppuration. He administers daily 15 grains of crystallized phenic acid in a four ounce mucilaginous potion.

Audhoui, who has employed the same medication, made use of the following potion:

R Acid phenic.....	gr. xv.
Mucilage acaciæ.....	℥ iv.
Syrup of quinine.....	℥ j.

M. SIG.—A tablespoonful every two hours.

² Guipon, of Laon, employs in the treatment of small-pox the perchloride of iron (tincture ferri chloridi), and the daily doses have varied between 12 gtt., the minimum dose, and 40 gtt., the maximum dose. This iron preparation acts after the manner of the abortives in small-pox.

There is attenuation and suppression of the secondary fever and more feeble develop-

stances,⁴ which render us great service, and which I earnestly recommend. These baths should be of a temperature of 95° F., and you should add to the water of the bath chloral solutions, solutions of thymol or antiseptic vinegar, and in particular that of Pennés. Their duration should be from half to three-quarters of an hour, and you should have care during the bath to give some stimulant, as rum punch.

I have said nothing of cold baths,⁵ which have been employed in the treatment of small-pox by König, Winternitz, and by Clement, of Lyons. These

ment of pustules. At the same time the perchloride of iron does not diminish the mortality of small-pox.^(a)

³ Jenna counsels the use of turpentine in hemorrhagic small-pox. He gives it in potion in the dose of 1½ drachms a day.^(b)

⁴ Disinfectant baths and lotions are prepared in numerous ways. Delieux, of Savignac, employs baths of hypochlorites, which consist of water containing in solution between three and four ounces of hypochlorite of sodium for a full bath, but he prefers tar water baths (about three gallons of tar water to a full bath). You make the chloral bath by adding to the water of the bath three ounces of chloral.

The antiseptic vinegar of Pennés is made as follows:

R. Acid salicylic.....	3 parts.
Acetate of aluminum.....	3 parts.
Concentrated tincture of eucalyptus glob.,.....	10 parts.
“ “ of vervain.....	90 parts.
“ “ of lavender.....	10 parts.
“ “ of benzoin.....	1 part.
Acetic acid of 8 degrees.....	10 parts.

M. For a full bath add about three ounces of the above solution.^(c)

⁵ Rhazes, whose veritable name was Abou Bekr Mohammed ben Zakarya Errazy, the last word of which, Errazy, means native of Rey, whence comes Rhazes, was the first to employ cold baths in small-pox.

The friar Rovida treated small-pox and eruptive fevers by ice. He made his patients drink a quart or more a day of ice water. Currie also made use of cold affusions and iced drinks in small-pox. Bohn says that the cold bath renders the variolic eruption more discreet. Hebra also advised cold baths in small-pox.

König employs cold baths in the treatment of small-pox; they are renewed every hour, and even oftener when the fever is intense. This refrigerant method is applied from the onset of the disease. The temperature of the water, till the appearance of the pustules, ought to be about 43° F., but as soon as the pustules appear it must be raised to 50°. König asserts that by this method he suppresses the period of suppuration, and mitigates the intensity of the disease.

Winternitz has also derived great advantages from this method. Wientraub, however, maintains that the refrigerant applications have no advantage, and that they are not without danger.

Desnos and Huchard have experimented with the treatment of cold baths in small-pox. According to them, the cold water does not act in a refrigerant manner in coherent, con-

(a) Guipon, Abortive properties of perchloride of iron in small-pox.

(b) Jenna, of Buenos Ayres, *Anales des circolo-medico Argentino*.

(c) Pennés vinaigre antiseptique, *Bull. le Ther. t. xcii.*, p. 426.

cold baths have quite another object, that of combating the hyperpyrexia; and although this practice goes back to Rhazes, it does not seem to have commended itself by its results, and for my part I have no experience with it.

To these local measures we must add the use of disinfectant powders, such as compounds of salicylic acid and starch or talc, as employed by Baudon,⁶ and painting with tincture of iodine, as practiced by Boinet, Delieux, of Savignac, and Pioch.⁷ These dressings, joined to the baths and disinfectant lotions, enable you to rid the patient of the sickening odor which he exhales.

fluent, and hemorrhagic variola; it only possesses a sedative action to the nervous system in the stages of invasion and eruption.

Clément, of Lyons, has also employed the refrigerant method in variola. He gives cold baths of 77° and 83° F., and follows the same practice as in the application of the method of Brand. He does not give these baths in the period of eruption, and only applies them at the moment of suppurative fever, and is guided in their administration by the thermic curve.^(a)

⁶ Baudon employs the salicylate of soda internally and externally in the treatment of small-pox; externally he makes use of an ointment having the following formula:

	Grammes.
Take of salicylate of soda	4.
Cold cream.....	100.

M.

And a powder with the following formula:

	Grammes.
Take of Salicylic acid.....	6.
Talc.....	100.

M.

He first anoints the parts with the first preparation, and powders them over with the second.^(b)

⁷ It was Boinet who first recommended tincture of iodine for the local treatment of the small-pox pustule. Delieux, of Savignac, also advises the use of iodine, and this is his manner of procedure. He does not employ tinct. of iodine until at the period of suppuration, and for the pustules of the trunk and members. To avoid an intense reaction, he makes his applications at several intervals, first on a lower limb, then on the arm, and, lastly, on the different regions of the trunk, and he keeps repeating these applications until he has obtained the drying up and shrivelling of the pustules. These applications hasten cicatrization, oppose putrid absorption, and favor the obliteration of cicatrices. He gives at the same time full chlorinated tar baths.

Pioch employs the following mixture:

Glycerine.....	3 parts.
Tinct. iodine.....	1 part.

A mixture which he applies with a camel's hair pencil every four hours.^(c)

(a) König, *Sur le traitement de la variole* [Corresp. méd. de Boeme, No. 12, 1874].—Weintraub, *De l'emploi de l'eau froide dans la variole* [Rev. méd. chir. de Vienne, 30 septembre 1874]. Clément, *Du traitement de la variole par les bains froids* [Lyon méd., février, 1877, p. 89, 153 et 225].—Hebra, *Traité des maladies de la peau*, t. Ier, p. 267.—Desnos et Huchard, *art. Variole*, in *Nouv. Dici. de méd. et de chir.*—Labadie-Lagrave, *Du froid en thérapeutique* [thèse d'agregation, 1878, p. 143].

(b) Baudon, *Treatment of small-pox by salicylate of soda*. (Bull. gen. de ther., 1881, t. ci., p. 448.)

(c) Delious, of Savignac, *New observations upon the abortive treatment of small-pox pustules*. Bull. de ther., t. LXXIX, p. 97.—Pioch on the treatment of small-pox by painting with iodized glycerine.

But there is a danger still more formidable than that from purulent absorption. I refer to the cardiac complications.¹ Disnos, Huchard, and Brouardel have given us a faithful picture of the variolic endopericarditis and myocarditis, and have indicated the cause of those sudden deaths which in old people attend the stage of suppuration. It is these troubles in the myocardium which explain the feeble pulse and the anæmic delirium which are also noted in this period, symptoms which we need to combat by tonics and stimulants, especially opium and ether.

Our colleague, Du Castel, has shown us the advantages which we may derive from this ether-opium treatment, and I have myself obtained good results from it in the care of small-pox patients in this hospital.² You can employ the ether in subcutaneous injections, being careful to insert them as deeply as possible; as for opium, you can give from two to four grains a day in divided doses of the extract. Or, you may adopt the mode of administration recommended by Constantin Paul for the delirium of febrile diseases, and give every hour or two ten drops of laudanum. To these means you should add alcohol in all its forms; also coffee, caffeine, the preparations of cinchona, in a word, all the agents of the tonic medication.

The period of desiccation has arrived, and to hasten the falling of the

¹ The morbid determinations which affect the heart under the influence of small-pox infection, have been studied, especially the last few years, by Desnos and Huchard. These complications are wanting in discrete small-pox with few pustulations, they are more frequent in the coherent form, which Desnos includes in the group of discrete varieties, and become constant in the confluent variety. They are characterized by inflammatory lesions of the myocardium, endocardium, and pericardium.

Variolous endocarditis appears especially in discrete small-pox, where it takes on especially the vegetating form. Myocarditis, on the contrary, is seen in the confluent coherent variolas.

Brouardel, who has also studied the vascular lesions in small-pox, has shown that there is produced a sanguineous effusion in the pericardium on the posterior face of the auricle; he has, moreover, observed lesions affecting the aorta.

These alterations of the heart reveal themselves by a *bruit de souffle*, which is soft, profound, diffuse, and transitory. There is often a reduplication of the second sound of the heart, the pulse becomes oscillatory, polycrotous; in fine, there is delirium, due to cerebral anæmia. Against this condition Huchard counsels caffeine to stimulate the heart's action.^(a)

² Du Castel employs the following treatment in small-pox. He practices morning and evening a subcutaneous injection of a syringeful of ether. Morning and evening from one to two grains of extract of opium are given. The more intense the delirium the larger the dose of opium. Finally teaspoonful doses are given of a potion containing in each drachm 20 drops of tincture of perchloride of iron.

Pecholier, who has employed this method, has obtained favorable results from it.^(b)

(a) Desnos et Huchard, Des complications cardiaques de la variole et notamment de la myocardite variolique [Un. méd., 1874].—Desnos, Considérations sur le diagnostic, le pronostic et le traitement des principales formes de la variole [Soc. méd. des hôp., 1870]. Notes sur les complications cardiaques de la variole et leur traitement [Bull. de théor., t. LXXXI, 385].—Brouardel, Etude sur la variole. Lésions vasculaires [cœur et aorte] [Arch. gén. de méd., décembre 1874].

(b) Du Castel, Traitement de la variole par la médication étherée-opiacée [Bull. gén. de théor., 1884, t. Cl, p. 241].—Pécholier, Sur un cas de variole traité par la médication étherée-opiacée [Bull. de théor., 1883].

scabs, you should use soap baths and inunctions with vaseline, that pomade of mineral origin which renders us such service every day.

It is at this period that vast purulent collections form, and your attention should be called to this fact, for these abscesses ought to be opened early. There will also be an indication to endeavor by a substantial dietary regime to repair the profound alterations which the disease has left behind it.

Such are the principal therapeutic rules applicable to the treatment of small-pox, and I pass now to the treatment of scarlet fever.

Scarlatina, unlike variola, has no prophylactic treatment, for nearly all attempts to prevent this disease by inoculation have failed.¹

Impotent to combat the invasion of the disease by vaccination, some physicians have pretended to be able to prevent it by prophylactic medication, and taking as their basis this strange notion that since the ingestion of belladonna gives rise to a scarlatinous eruption, it must therefore cure scarlatina, and following in the wake of Hahnemann, they have proclaimed belladonna as both curative and prophylactic.² To-day this question is absolutely settled, and all are agreed in regarding this pretension of the specificity of belladonna as illusory.

Moreover, I regard scarlatina as the least contagious of the eruptive fevers

¹ Inoculation for scarlatina was attempted by Miguel, Mandl, Petit-Radel, and Most. Miguel made use of blood taken from the scarlatinous patches, and he saw produced around the punctures a red circle, which disappeared the seventh day. These subjects of inoculation are rebellious to scarlatina. Leroy, of Etiolles, witnessed the same results after inoculation with blood from a scarlet fever patient. Mandl has advised inoculation with the product of the miliary vesicles which accompany scarlatina. Darwin practiced inoculation with the liquids furnished by the ulcerations of the pharynx. As for Most, he proposes the inoculation of blood taken from swine affected with a sort of quinsy, accompanied by an erysipelatous eruption.^(a)

² Hahnemann was the first to prescribe belladonna in homœopathic doses as a prophylaxis in scarlatina. He based himself on this fact, that belladonna in large doses determines an eruption analogous to that of scarlet fever. This prophylactic action has been tested in Germany, England, and France, by numerous experimenters, as will be seen by consulting the bibliographical references given below. Notwithstanding the favorable results claimed by some of these authorities, everybody to-day is agreed in admitting this claim of Hahnemann as to the protective power of belladonna in scarlet fever to be a delusion and an absurdity.^(b)

(a) Miguel d'Amboise, Bull. de l'Acad. de Med., 9th September, 1834. Leroy d'Etiolles. A study of the preventive treatment of scarlatina by belladonna and by inoculation (Gaz. Hebd., 1878), Sanné. Art. Scarlatina in Dict. Encyclop. des Sc. Med.

(b) Walburton-Begbie, British and foreign medico-chir. review, janvier, 1855.—Berndt, Bestätigende Erfahrungen über die Schutzhraft der Belladonna, etc., Hufel. Journ., t. LI, st. II, p. 5, 1829.—Wolff, Die Schutzhkraft der Belladonna geprüft in der letzten Scharlach-Epidemie, Horn. Arch., t. II, p. 490, 1822.—Puchelt, Bella. als Schutzm. gegen das Scharlach, geweirdigt heidelb., Klin. Ann., t. V, 242, 1885.—Hufand, Die Schutzhkraft der Belladonna gegen das Scharl., neue, etc., Hufel. Journ., t. LXI, st. 5, p. 3, et Berlin, 1826.—Wildberg Einige wort über das Scharlach fieber und den gebrachn der Belladonna als Schutzmittel gegen dasselbe, Leipzig, 1826.—Maclure, Remarks on the extract of Belladonna given as Prophylactic against the contagion of Scarlet fever, in Loud. Med. Gaz., t. XXI, p. 363, 1838.—Morris, Experiments made to determine the protective power of Belladonna in Scarlatina, Amer. Journ., 2e série, t. XXXIII, p. 334, 1857.—Shevenart, De l'emploi prophylactique de la belladone dans la scarlatine épidémique, 1843.—Féron, Note sur l'emploi de la belladone dans la scarlatine, Journ. des conn. med. chir., 1859, t. II, p. 63.—Ibrelisle, Experiences faites avec la belladone employée comme preservatif de la scarlatine, Bull. de la soc. med. d'em., 1823, p. 204.

(it is so, at any rate, in Paris), and the small number of scarlet fever patients that we receive into our wards have seldom or never given the disease to other patients. You know, moreover, how different is the mortality of scarlet fever according to the country in which it prevails; and while in England epidemics of this disease are characterized by their gravity, in France, and particularly in Paris, this affection is almost always isolated, and is dangerous principally by the complications which may arise during convalescence. I shall then be very brief concerning the therapeutic indications which the question of treatment suggests.

In the period of invasion, which is generally very short, you may employ sudorific ptisans or teas, liquor ammoniæ acetatis, and especially carbonate of ammonia, which has been vaunted by Peart, by Wilkenson, by Strahl, and by Ricken, of Brussels.

During the period of eruption the indication is to diminish the dryness of the skin, and facilitate desquamation by inunctions made with fatty substances.¹ Some, as West, employ lard, others bacon fat. Scoutetten recommends sweet oil. I am in the habit of using vaseline, which does not oxidize or become rancid. You will do well, then, at the period of desquamation, to practice frequent inunctions of vaseline over the whole body, both to hasten the fall of the epidermic scales, and to protect the skin from exterior agents. This state of the skin is, as you know, one of the sources of danger during convalescence, by reason of the renal complications which may arise; you ought then to insist upon the greatest precaution during the period of convalescence, and keep the patient for six weeks in his room, and generally one month in bed, and never allow him to go abroad till there shall have been complete renewal of the epidermis. You can aid this process of reparation by warm baths while the epidermis is scaling off.

I shall not speak here of the pharyngeal complications of scarlet fever; you are familiar with the morbid determinations of this disease to the throat, whether it consist in a pultaceous angina or in a veritable diphtheria, according to Archambault's views, who unites scarlatina and diphtheria in the same description; the same treatment is proper for both, and I need not here repeat what I told you when on the subject of diphtheritic sore throat. But there is another complication which ought to occupy us a few minutes. I refer to the

¹ West recommends during the eruption to anoint the whole surface of the body with lard. Eberth, in 1851, put in use another popular practice, which consisted in making inunctions at all periods of the disease with bacon fat. Scoutetten made use of oil, slightly warmed, and this was his manner of procedure: By means of a piece of flannel wet in this oil, all parts of the body were rubbed for a few minutes, without excepting the face and feet; then the frictions being terminated, the patient was put to bed and kept there for two hours. The next day he was given a bath, with temperature about 90°F., of one hour's duration; being taken from the bath, he was put to bed, and submitted to another rubbing with oil. This treatment is exclusively put in practice when the patient is about to leave his room, and in order to free the skin of the pellicles which cover it. (a)

(a) West, *On the Diseases of Children*. London, 1880.—Scoutetten, *On Measles and Scarlatina*; mistakes and misjudgments in the treatment of scarlet fever. Metz, 1868.

nervous manifestations which accompany certain scarlatinous eruptions, and which are tributary to a treatment to which Trousseau has devoted one of the finest passages of his clinical lectures—I refer to the treatment by cold affusions. Recommended by Currie,¹ this method is become to-day classical, and in the practice of certain physicians, particularly the Germans, it is employed indiscriminately in all cases. Here, also, as in all the applications of the refrigerant method, it is rather against the manifestations on the part of the nervous system, than the elevation of temperature, that these cold affusions can render

¹ Currie was the first to employ affusions and lotions of cold water in the treatment of scarlet fever. He treated his two sons, affected with malignant scarlet fever, and from 1800 to 1804 more than 150 patients in the following manner: The patient was stripped naked and put into an empty bath tub, and four or five pailfuls of cold water were poured upon him. Since then this treatment has been very much employed in England as in France. Reed and Murray in 1803, Bruce in 1812, in England; Caron, of Annecy, and especially Trousseau, have very much vaunted affusions of cold water. Martin, of Nosen; Nasse, of Bielsfeld; Besle, of Berlin, have also employed in Germany cold lotions. Moreover, since the application of the refrigerant method to the treatment of febrile affections, cold affusions, and especially cold baths, have been very much employed in the treatment of scarlet fever. Thus it is that Liebermeister affirms that he has employed cold baths with success in the treatment of scarlet fever, that Cohn has maintained that cold affusions constitute a prophylactic treatment of this affection, that Pelz has employed these baths to bring down the temperature, without, nevertheless, deriving the same advantages as in other febrile affections.

Eddison applies cold water as a general method in the treatment of scarlet fever. The temperature of the bath ought to be about 98°F. at the commencement, and it should be gradually cooled down to 72°F. The duration of the bath should be according to circumstances. He asks if it would not even be well to leave the patient several hours in the bath, if not all day.

John Taylor has studied the action of the wet pack in scarlatina. It is, in his estimation, one of the best therapeutic means to arouse and promote the cutaneous elimination, interrupted in scarlatinous patients. The application of the wet pack should be renewed from two to four times during the twenty-four hours, each application lasting from half an hour to an hour. Taylor's method is as follows: A night gown, open in front, is taken and dipped in a basin of warm water, which may be pure, or medicated with a little mustard or tincture of pimento. This is well wrung out and wrapped around the patient, and the feet are enveloped in a towel, wrung out of warm water; then the patient is covered with three woolen blankets, and over the whole a thick coverlet is spread.

Fraser employed, during an epidemic of scarlet fever, warm baths gradually cooled, or cold baths, guiding himself by the rectal temperature and the state of the nervous system. He gave one to six baths during the twenty-four hours to his patients. Under the influence of these baths he always observed an amelioration. (a)

(a) Currie, Medical reports on the effects of water, cold and warm, as a remedy of fever and other diseases, Liverpool, 1798 et 1804; extr. dans *Biblioth. britann.*, t. XVII et XXX, par Odier, idem, 5e edit., 2 vol., 1814.—Reid et Murray, *Scarlatine traitée par les affusions froides*, *Med. and Phys. Journ.*, t. XI, p. 27, 1803.—Bruce, *Scarlatine traitée par les affusions froides*, *Med. chir. Trans.*, t. IX, p. 275, 1812.—Trousseau, *Des affusions froides dans le traitement des accidents nerveux de la Scarlatine et du délire fébrile dans cette maladie*, *Un. méd.*, 1857, p. 411, *Clin. méd. de l'Hôtel-Dieu*, 5e edit., 1877.—Martin, de Nosen, *Scarlatine traitée par les affusions froides*, *Bull. des sc. méd. de Ferrussac*, t. X, p. 349, 1814.—Liebermeister, *Handbuck der Pathologie und Therapie des Fiebers*, Leipzig, 1875.—Cohn, *Hydrotherapie des Scarlach*. Berlin, 1868.—Pilz, *Mittheilungen über Behandlung des Scarlachfiebers mit Bädern*, *Jahrb. für Kinderh.*, t. III, p. 253.—Eddison, Note on the treatment of Scarlet fever by the external application of cold water with two cases, the *Lancet*, 4 et 18 septembre, 1875, p. 340 et 414.—Taylor, the wet pack in Scarlatina, the *Lancet*, 14 novembre, 1875, p. 692.—Fraser, the Bath treatment in Scarlet fever, the *Pract.*, vol. XXVII, no. 1, p. 34, 1881.

service; and you will not need to put this mode of treatment in practice unless there shall supervene at the commencement of the period of eruption, ataxo-dynamic phenomena of great gravity. For my part I have never found, since I began the practice of medicine, cases of scarlet fever sufficiently grave and menacing to require such treatment. Scarlatinal dropsy does not offer any special therapeutic indication apart from that which I enunciated while on the subject of the treatment of albuminuria; and without dwelling longer on anti-septic medications¹ proposed for scarlet fever, I pass now to the treatment of measles.

This very contagious, but little dangerous malady, (unless by the complications which may arise), does not present any very special therapeutic indications, and treatment should be directed rather to the morbid manifestations determined by the disease than to the disease itself. I shall then say very little on this subject, and you will have to apply here only the general hygienic and therapeutic measures proper to all the eruptive fevers, and which consist in warm sudorific ptisans, as well as the greatest care to prevent all exposure to chills, and in attention to the thoracic organs, so that you can interfere in time if any pulmonary complications manifest themselves.

I have now finished the therapeutic indications which I desired to give you for the management of the eruptive fevers.

These lectures complete the course on which I had determined; and incomplete as they are, they will furnish you data of a practical kind concerning the principal diseases which, in our country at least, you will be oftenest called upon to treat.

¹ Samson has proposed to treat scarlatina by antiseptics. He administers the sulpho-carbolate of soda in the dose of a gramme and a half. Brackenbridge has adopted this method of treatment, and has derived good results; he has even employed it as a prophylactic means, and, according to him, this medicament prevents infection.(a)

(a) Brackenbridge, On the prevention and treatment of scarlatina. Med. Times and Gaz., 1875, t. II p. 92.

APPENDIX TO THE CHAPTER ON MEDICAL ELECTRICITY.

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BY DR. C. L. DANA.
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Since writing the chapter upon Medical Electricity, good absolute galvanometers have become attainable. They constitute an extremely important addition to the armamentarium of the electro-therapeutist. The unit of measurement is the milleampere as suggested by De Watteville. The dose of galvanism, measured in these units, ranges from one to 40 or 50 milleamperes, a current of moderate strength being about ten milliamperes. Vertical galvanometers are probably the best. Hirschmann, of Berlin, John S. Barrett, and Waite & Bartlett, of this city, make trustworthy instruments. The price is from \$15.00 to \$25.00.

Additional accuracy in recording and dosing electricity is gained by indicating by formula the frequency, and length of time that the current is passed, and the size of the electrode. A prescription for the administration of galvanism, for example, can be written thus: R. Galvanic current, 10 m. a. $\frac{5}{15}$ cm. daily; Polar; Labile; which means that a galvanic current of ten milleamperes' strength is to be given daily for five minutes with an electrode 15 centimeters square, by the polar method, the active pole being rubbed over the affected part (labile).

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