ON THE TREATMENT OF SYPHILIS.

SUMMARY.—Origin of Syphilis—Necessity of the Mercurial Treatment of Syphilis—Mercury—History—Absorption of Mercury—Its Elimination—Elimination by Milk—Mercurial Salivation—Anti-Syphilitic Action of Mercury—Mode of Introduction of Mercury—Dermic Method—Mercurial Frictions—Mercurial Baths—Hypodermic Methods—Injections of Ammoniaco-Mercurial Peptones—Respiratory Method—Dermo-Pulmonary Method—Mercurial Inhalations—Method per Os—Mercurial Preparations—Adjuvant Medications—Vegetal Treatment—Guaiacum—Pilocarpine—Iodide of Potassium—General Treatment—Method of Successive Treatments—Concerning the Cure of Syphilis—The Marriage of Syphilitic Persons—When Ought the Anti-Syphilitic Treatment to be Commenced?—Necessity of Treatment—Are all the Manifestations of Syphilis Tributary to the Specific Treatment?—Treatment of the Indurated Chancre—Iodoform—Sulphide of Carbon—Treatment of the Stages—Mixed Treatment—Treatment of Mucous Patches—Treatment of Tertiary Syphilis—Treatment of Venereal Affections—Soft Chancre—Blenorrhagia—Its Treatment—Cubebs and Copaiba—Urethral Injections—Treatment of Gleet—Abortive Treatment—Blennorrhagic Vaginitis—Vaginal Suppositories—Gurgun Balsam—Vaginal Injections.

GENTLEMEN: In the exposition which I desire to make of the treatment of syphilis, I shall endeavor to be as brief and as practical as possible. I shall, then, put aside the great questions which a consideration of treatment raises, and especially those pertaining to public hygiene and prophylaxis which are so earnestly discussed to-day, and shall concern myself exclusively with the means which will enable you to cure as speedily as possible the various manifestations of venereal disease.

Syphilis is unfortunately a malady whose frequency increases daily, and whose symptoms you will in your practice have to combat a great many times.

I shall not, then, discuss before you the origin of venereal disease.[1] It is probable that, like the greater number of diseases which afflict humanity syphilis was known in the first periods of the human race, and if we may credit

[1] Historians relate that at the end of the fifteenth century (1495) occurred the first outbreak of syphilis in France, at the time of the French expedition against the Neapolitans; the French called it Italian plague, the Italians gave it the name of *French plague*. Fracastor has given us the most complete description of this epidemic, but an attentive study of the facts shows that syphilis existed a long time before but was only known by certain isolated manifestations.

In China syphilis has existed from all antiquity, and in a book which goes back to B. C. 2637, and is attributed to Hoang-ti, you will find a description of all the syphilitic accidents; the account of chancre is especially good

In India also a very exact account of syphilis and its many symptoms is contained in the Sucrutas-Ayurvedas, which may be considered as the Hippocratic treatise of Indian medicine.

According to an Indian myth Cira, having given himself up to sensual indulgences, was punished by gangrene of the genital organs; and this disease spread over the whole world by contagion, only yielding, if ever, to the prayers of the penitents.

The Jews, Greeks, and Romans also had a knowledge of syphilis. The disease of Job bears striking resemblance to syphilitic dermatosis. The Greeks had a religious myth similar

Parrot, the prehistoric man was not exempt from it. Nor shall I discuss the necessity of mercury in the treatment of syphilis; this question seems decided at the present day, and it would be to gainsay the clearest evidence not to admit the efficacy of mercurials in this disease. I am well aware that abuses have been made of this remedy; that not all cases of syphilis are curable by quicksilver; that the treatment is not suitable to all periods of the malady; but what I cannot understand is the obstinacy of a small, though influential, number of physicians, who refuse to acknowledge, as demonstrated, the marvellous action of mercury in a great many cases of syphilis.[2]

It suffices to have been an attentive observer, during one's practice, of a few cases of syphilis with cerebral complications of great gravity, and to have seen them disappear as by enchantment under the influence of an energetic mercurial course, to compel one to admit, without reservation, the therapeutic power of mercury in syphilis. I am going, then, to set forth at some length the fundamental principles of this hydrargyrate medication.

Considered by the writers of antiquity as one of the most energetic poisons,[3] mercury was used externally by the Arabs; Rhazes recommended

to that of the Indians. Some of the Latin writers describe phenomena which clearly appertain to syphilitic affections.

Modern anthropological researches justify these views. Parrot has shown on the bones of prehistoric man morbid alterations clearly of syphilitic origin, at least according to Broca, who is good authority.

In the prehistoric burial places of the new world St. John has also found exostoses of the same nature.

[2] Although in the sixteenth century there was vehement opposition to the mercurial treatment of syphilis, and Fernel in particular protested against its employ in this disease, the war against the hydragyrate treatment has been waged with the greatest violence in this present century. Broussais began it in France by decrying the specificity of syphilis and recommending the antiphlogistic medication. His followers, Dubled, Bobillier, Richoud des Brus, have gone so far as to affirm that the accidents observed in syphilis are due to mercury.

Murphy, in England, took this view in 1839, and Joseph Hermann, in Germany, made a veritable crusade against this medication.

Lorinser has carried the opposition even farther, and basing his views on the researches of Kletzinsky, and Melsens, who affirm that iodide of potassium eliminates mercury, he maintains that this last medicament benefits only in this way in syphilis.

At the same period in France Anzias-Turenne repudiated mercury quite as absolutely, and proposed syphilization as a means of treatment, and he was followed in this line by two foreign practitioners, Sperino, of Turinne, and Boeck, of Christiana.

Coincidently with these labors there was made a study of the natural evolution of the disease which commenced by the observation of William Fergusson, who during the war between France and Portugal in 1813 noticed that the Portuguese soldiers treated without mercury got well quite as rapidly as the English soldiers treated with it. John Thompson, in England, Boerensprung, in Germany, and Diday, in France, showed that a considerable proportion of syphilitic cases get well without mercurial treatment. To these names we should add that of Désprès, who has distinguished himself as one of the most bitter adversaries of mercury.

[3] The ancients made little use of mercury as a medicine for they regarded it as a poison. Galen, Dioscorides, Aretæus, attributed to it tonic properties. The Arabs, while

mercurial applications as part of the treatment of tinea, of scabies, of the mange, and of all wounds of bad nature, and as it is the property of syphilis to produce cutaneous ulcers of foul aspect, it is easy to understand how, from the appearance of the epidemic of syphilis at the end of the fifteenth century, this medicament came to be used in the treatment of these sores. It is then a matter of history that Marcellus Cumanus in 1495, Casper Torella in 1497, Conrad Gilini still later employed mercurial ointment in the treatment of the grave cutaneous affections which were observed in France and Italy as a sequence of the siege of Naples.

The introduction of mercury into practice as an internal remedy was of later date, and it was not till 1536 that Matthiolus dared prescribe it internally for syphilis, and since this epoch down to the present time, the medical profession has not ceased to administer this medicament, and to note its good effects. Notwithstanding the multiplicity of works on this subject, we are ignorant of the *modus operandi* of this remedy, and while no medicine is in so general use in

admitting its deleterious properties, recommend mercurial preparations for outward use in itch, mange, and to kill lice. Rhazes and Serapion give for these purposes very precise formulas, which were brought again into vogue in the thirteenth and fourteenth centuries by Theodoric (1280), and Arnaud de Villeneuve (1300). It was as a result of these topical methods of using mercury that mercurial ointments came first to be employed in the treatment of syphilis, and they were utilized at the time of the first outbreak of syphilis in Europe, in the fifteenth century.

In 1495 Marcellus Cumanus, physician to the Venetian army, recommended a mercurial pomade consisting of quicksilver in combination with oil of sweet almonds and lead lotion.

Gaspard Torella in 1497, and Conrad Gilini in 1498, also speak of mercurial ointments as external applications in syphilitic ulcers. Metallic mercury was in use as well as cinnabar and corrosive sublimate in ointments, plasters and fumigations.

Jean de Vigo in 1518 was the first to administer red precipitate, not for pox, but for the plague. Several years later Matthiolus prescribed it in syphilis. The year following (viz., 1537), Pierre de Bayrs, physician to Charles II., gave a recipe for some pills which Barberousse, King of Algiers, Captain Gen. of the Turks, during the reign of Soloman II., had sent to his ally, Francis I., who was suffering from the venereal disease. These pills contained metallic mercury associated with rhubarb, aloes, amber, mastic and myrrh. At this epoch not only was the external and internal use of mercury known, but also all the dangers attending this medication, which was very popular and largely in the hands of quacks, and nothing is more curious than the narrative which Ulrich von Hutton has given, who, having had the pox, was subjected eleven times during nine years to mercurial treatment, from which he experienced cruel sufferings.

Astruc has also given us a touching account of the unhappy victims of syphilis under mercurial treatment: "As their mouth was one fetid ulcer, and their stomach was enfeebled, they had no appetite; many were attacked with vertigo, some with madness; they were seized with a trembling of the hands, of the feet, and of the whole body, and they were subject to a stuttering often incurable; I have seen a great many die during the treatment." It was at this epoch that the reaction against mercury took place, and sudorific woods, guaiacum in particular, were introduced into the treatment of pox. Physicians were then divided into mercurialists and anti-mercurialists. (*a*)

(*a*) Gaspard Torella, *Tractatus eum consiliis*, Romæ, 1497.—Rhases, *Ad Almansor*, 850, lib. IX.—Serapion, *Libro de simplici medicina.*—Mesue, *In antidotario.*—Ulrich de Hutten, *De guaiaci medicina et morbo gallico*, Magientiœ, 1519.—Hollopeau, *Du mercure* (thèse d'agrégation, 1878).

syphilis, there is none whose physiological action is more obscure. I am, nevertheless, going to give you some information which we possess relative to the ways of absorption and elimination of mercury, and I will do this, taking as my principal guide the remarkable work which my colleague in this very hospital, Dr. Hallopeau, has devoted to this medicament.[1] Mercury may penetrate the economy, either by the digestive tube, by the respiratory passages, or by the skin, and therapeutics utilizes all of these ways.

There has been much discussion about the penetration of mercury by the skin. It is known, in fact, that quick-silver, when finely divided, as it is in mercurial ointment, may enter the economy through the skin, when not devoid of its epithelium, and this is one of the methods by which salivation may be most rapidly produced. How does this penetration take place? Some, as Overbeck, Eberhards, Oesterlen, have pretended that mercury in the metallic state penetrates the subcuticular vascular network. Others, as Rindfleisch, have maintained that this penetration of mercury in the metallic state is impossible, and that it is only after having been transformed into a soluble chloride by the sudoral secretion, that quicksilver enters the economy. The recent experiments of Fleischer give much support to these last views.[2]

It is then in the state of chloride, and especially of bichloride, as Mialhe[3]

[1] Hallopeau. De Mercure Thesè d'agregation. Paris, 1880.

[2] The claim has been made that mercury may directly penetrate the vessels in metallic state, when frictions with mercurial ointment are made. Oesterlen pretends to have found globules of mercury in the blood of cats over whose skin he practiced mercurial frictions. Eberhard and Overleck affirm that mercury filters through the skin, and that they have found it even in the sub-pleural tissue, while Blomberg claims to have found metallic mercury in all the tissues.

Fleischer has recently taken up this study, and from very conclusive experiments he has proved that if mercury penetrates the more superficial layers of the epidermis, it never reaches the *rete mucosum*.

A great number of authorities agree in affirming that in the case of frictions with mercurial ointments, absorption takes place in two ways: by the lungs, and by the transformation of mercurous or mercuric oxides into chlorides. (*a*)

[3] Mialhe has pretended that mercury does not penetrate the system except in the state of bichloride, or in the form of an alkaline hydrargyrate-chloride. The protoxides undergo transformation, he thinks, into protochlorides, and then into bichlorides.

Voit admits the same thing—to wit, that the suboxides undergo transformation into calomel, and the oxides into bichloride; these last unite with the chloride of sodium and albumen of the blood.

The recent investigation of Bucheim, and of Ottingen, and those of Otto Graham make it appear probable (contrary to the views of Mialhe) that the protochloride combines with albumen to form an assimilable albuminate of protoxide of mercury.

Bellini has studied the modifications which the chlorides, the bromides, and the iodides undergo. Calomel, according to him, dissolves in the stomach and in the intestines under

(*a*) Rindfleisch (Ed.), *Zur Frage von der resorption des regulinischen quecksilbers* (*Arch. der Dermatol.*, t. II, p. 309, 1879).—Overbeck (Rob.), *Mercur und syphilis. Physiologische-chemische und pathologische Untersuchungen das quecksilber and über die quicksilberkrankheit*, Berlin, 1861.—Blomberg, *Nagra ord om quicksilfvrets absorpcion af organismen*, Helsingfors, 1067.—Hallopeau, *Du mercure* (thèse d'agrégation, 1878.

affirms, that all mercurial preparations enter the blood, combined, be it understood, with the albumen of the blood, thus constituting a double albuminate or peptonate of hydrargyrum and of sodium.

When once it has penetrated the blood, mercury, after having sojourned a variable time in the economy, is eliminated by divers emunctories, in particular by the kidneys, by the fæces, by the milk, by the sweat, and by the saliva. The duration of this elimination depends on the duration of the mercurial treatment, and when this has been very prolonged, one may find mercury in the urine for several weeks after the treatment has been discontinued. Mercury seems, in fact, to fix itself in different viscera, and in particular in the liver.[4] It has been maintained that it is this fixation of mercury in the bones which provokes those osteocopic pains so frequent in the advanced periods of syphilis. This interpretation is absolutely erroneous, for there are syphilitic patients who, never having followed any mercurial treatment, have osteocopic pains of the most violent kind, and these pains seem to be mitigated under the influence of mercurial preparations.

Among the channels for elimination of mercury, there are two which interest the therapeutist—the mammary and the salivary glands. The fact of elimination by the saliva explains the cause of the salivation which so frequently attends the mercurial treatment. It is, in fact, maintained that it is the presence of chlorides of mercury in the saliva which is the point of departure of the

the influence of chlorides and lactic acid, being transformed into a double chloride of mercury and sodium and into lactate of mercury. The iodides and the bromides undergo a similar change, being transformed into double salts under the influence of the alkaline chlorides and lactic acid. A part of these salts enters the circulation, another part is transformed into sulphide of mercury in the large intestines, and eliminated in the fæces. (*a*)

[4] The elimination of mercury is effected by the kidneys, intestines, mammary glands, perspiratory and salivary glands. The utility of this last kind of elimination has been much disputed of late years, yet Bernaski has determined the presence of mercury in the saliva taken directly from Steno's duct.

Personne, Blinz, Lewald, and Klink have found mercury in the milk of nurses submitted to mercurial treatment.

Riedérer has examined experimentally the quantity of mercury eliminated by the different emunctories. In an animal which had taken, in twenty-nine days, nearly two grammes of mercury, during this time four per cent. was found in the fæces, nine per cent. in the urine, and during the succeeding eighty-one days there was still found in grammes and fractions of a gramme, .0568 in the fæces, .0040 in the urine, and .0026 in the liver.

Mayencon and Bergeret have studied the rapidity of elimination of the mercurial preparations. Experiments show that the greater part of the medicament is immediately eliminated in the urine, and that another part, after having become fixed in the tissues, is eliminated very slowly and insensibly, insomuch that several days after the cessation of the mercurial treatment the presence of mercury is detected in the urine. (*b*)

(*a*) Rindfleisch, Arch. de Dermatol., t. ii, p. 309. Overbeck, Mercure und Syphilis, Berlin, 1861. Hallopeau, Th. d'agregation, 1878. Voit, Physiologie, Chemische Untersuchungen, 1 Heft, Augsbourg, 1858. Blomberg, Nagra ord om quicksellfvrets absorpcion, af organismen, 1867.

(*b*) Bergeret and Mayencon, "Clinical Means for Recognizing Mercury in the Excretions, and principally in the Urine;" Lyon Medical, t. iv., 1873, p. 179.

irritation of the mucous membrane of the gums. At the same time this point of pharmaco-dynamic action demands to be studied anew, for the salivation seems to depend especially on the mode of administration of the mercury. Very easily provoked by cutaneous inunctions, it is exceptionally produced by hypodermic injections.[1]

Can we find in the physiological and toxicological action of mercury the explanation of its anti-syphilitic action? Unhappily, no; and the study of mercurialization, whether slow and chronic or sudden and acute, observed so often in men who work in industries where mercury is in use, does not furnish us any data for the solution of this important therapeutic question.

It has been said that mercury acts on the blood-globules and the plasma; this may be true in the normal state, and when it acts as a poison. But this is the very opposite of what takes place in syphilitic patients, where one constantly sees under the influence of a well-regulated treatment, the number of red globules augment, as well as their richness in hæmoglobin. The experiments of Wilbouchewitz of Moscow, of Keyes, of Robin, of Schlesinger, are absolutely confirmative in this respect. Mercury cures syphilitic anæmia, but it is powerless to benefit other anæmias.[2] It is necessary then to admit that mercury possesses a specific property in the treatment of syphilis, and we are obliged to content ourselves with the data which are furnished us by empiricism and tradition concerning the antisyphilitic action of mercury.

[1] Several hypotheses have been advanced as to the mechanism of mercurial salivation. It was at first maintained that mercury is eliminated by the saliva, its presence determining irritation of the gingival mucous membrane.

Fournier pretends that the initial fact of mercurial salivation is an alveolo-dental periostitis, which at its start affects the last molar of the side on which the patient sleeps. The salivation is secondary to the outbreak of this periostitis. As for the cause of this alveolo-dental periostitis it is believed to depend on a bad state of the teeth or on the local action of the mercurial preparations administered by the mouth.(*a*)

[2] It has been asserted that mercurial preparations have a special action on the lymphatic system. Some have affirmed that mercury is a lymphatico-glandular debilitant. James Ross, on the other hand, has proved that mercury stimulates the functional activity of the lymphatics and this explains the resolvent action of the medicament. Fonssagrives takes the same view.

Mercury, moreover, has, according to the experiments of Rutherford, an action on the liver, but while calomel is but slightly cholagogue, the bichloride is much more so.

Wilbouchewitz, of Moscow has studied the action of mercurial preparations on the blood by means of the numeration of the globules. He has always observed that the number of the red globules is greater in syphilitic persons during mercurial treatment than before; it is the contrary with the white corpuscles. He concludes from this that syphilis is the cause of the corpuscular diminution and that mercury by antagonizing this action causes the globules to increase.

In animals under experimentation the administration of mercury always occasions a diminution in the number of globules, and this globular deficiency ceases when the use of mercurial preparations is abandoned.

Keyes, in repeating these experiments by means of Hayem's hæmatimetre, finds that mercury in small doses augments the number of globules, but diminishes them in large

(*a*) Hallopeau de Mercure (Thése de Paris, 1878.)

The absorption of mercury may take place, as I have told you, by three ways: by the skin, by the lungs, by the stomach. Therapeutics utilizes these three modes of introduction, and thence result three different modes of treatment of syphilis: the dermic and the hypodermic method, the respiratory method, and finally administration by the alimentary canal.

Let us examine the advantages and disadvantages of each of these methods:

The dermic method is the most ancient. We have seen that it was by applications of mercurial ointment that attempts were first made to cure syphilitic sores. This method is still employed at the present day; nevertheless, since the improvements in hypodermic injections of our time, the dermic method is much less used than formerly. Frictions with mercurial ointment, if they cause mercury rapidly to enter the economy, have the very serious objection of speedily determining salivation. For these inunctions mercurial ointment is used; the "fortior" and the "mitior." The stronger ointment is called the Neapolitan cerate. As it is generally admitted that mercury does not penetrate the system till it has been subjected to the action of the sudoral secretion, the rule has been to practice these inunctions on parts of the skin where the sweat glands are the most numerous, as in the arm-pit, the groin, the soles of the feet. Denis Dumont has even proposed, under the name of *Neapolitan hose*, a very convenient method for making these applications, especially when the patient wishes to conceal the treatment which he is pursuing. This method consists in making the patient put on, at bedtime, a pair of *hose* or *long stockings*, the interior of which has been medicated with Neapolitan ointment. As for the frictions, they are repeated once or twice a day, according as one wishes to obtain a more or less rapid action. The rubbing lasts from five to ten minutes, and when once finished, it is the custom to wash the parts where the inunction has been made, to avoid the local irritant action determined by prolonged application of the mercurial pomade.

Mercurial baths form a part of the dermic method of treatment. Here the penetration of the mercury into the system is much less active, and if baths of corrosive sublimate render some service in therapeutics, it is simply by their local action. These baths, the only mercurial baths employed, contain 3 v of

doses. Robin has attained the same results, obtaining in patients treated with mercurial injections augmentation in the number of globules. Schlesinger's experiments lead substantially to the same conclusions.

Martineau has also noted increased production of globules under mercury; the number which is in general from two millions to two millions and a half, went as high as from four to five millions, and this chiefly under the influence of subcutaneous injections of ammoniaco-mercurial peptones.

(*a*) Wilbouchewitz, *De l'influence des préparations mercurielles sur la richesse du sang en globules blancs at en globules rouges* (*Arch. de phys.* juillet et septembre, 1874).—Keyes, *The effect of small doses of mercury in modifying the number of the red blood corpuscules in syphilis; a study of blood counting with the haemat'imetre* (*American Journal*, No. 17, Jan., 1873.—Em. Robin, *Recherches sur l'influence du traitement mercuriel sur la richesse globulaire* (thèse de Paris, 1880).—Schelinger, *Experimentelle Untersuchungen über die werkung lange zeit fo tgegebenen kleiner dosen quecksilbers auf thiere* (*Arch. f. exper. pathol. u. pharmak.* (Bd. XIII, Hft. 5, p. 347).—Martineau, *Des injections souscntanées de peptones mercuriques ammoniques dans le traitement de la syphilis* (*Union medicale*, 20 août 1882).

corrosive sublimate for a full bath.[1] You can add to these baths common salt or sal ammoniac. It is also the local effect that is sought for when the various mercurial plasters are prescribed, the most known of which is that of Vigo.

The hypodermic method of the treatment of syphilis is of quite recent date, and thanks to the improvements which have been made in the liquids used in these injections by Martineau and Delpech, this method, which has all the advantage of the dermic mode without the disadvantages, namely, a very prompt and energetic action, without salivation, tends to take the place of the dermic method. It was Hebra and Charles Hunter who, in 1863, first practiced sublimate injections in the treatment of syphilis, and in 1868 Liegeois popularized this method in France; but these first trials were unsatisfactory, and the method was abandoned. Corrosive sublimate is in fact very irritating, and it is easy to see that these subcutaneous injections, very painful as they are, might cause grave local lesions. For the solutions of corrosive sublimate and chloride of sodium, which were employed by Hebra, Charles Hunter, Lewing, Liegeois, and Tachard, it was proposed to substitute the cyanide or the bicyanide of mercury as Mandelbaum and Guntz proposed. Others, as Luton and Fürbringer, advised injections of metallic mercury, rubbed up with glycerine and gum arabic. But all of these solutions were always painful, and it was only by combining albumen and peptones with corrosive sublimate that solutions were obtained having a very feeble irritant action. This is what has been accomplished by Neumann, Bamberger, Terrillon, and especially Martineau and Delpech, who, in uniting chloride of ammonium with peptones and with corrosive sublimate, have made a solution of mercuric ammoniacal peptone which is absolutely neutral, keeps perfectly, and rarely determines local lesions when properly injected.[2]

[1] The formula of corrosive sublimate baths is as follows :

1.

℞ Bichloride of mercury, 2 parts.
Alcohol, 5 parts.
Distilled water, 200 parts.

M.

2.

℞ Bichloride of mercury, 3 parts.
Chloride of ammonium, 3 parts.
Water, 1000 parts.

M.

3.

℞ Bichloride of mercury, 1 part.
Chloride of sodium, 1 part,
Warm water, 100 parts.

M.

[2] Neumann maintains the advantage of subcutaneous mercurial injections; he lauds especially solutions of corrosive sublimate with albumen and peptones as being but slightly, if at all, irritating. Bamberger uses the following solution: To 200 cubic centimetres of albumen, as pure as possible, add 300 cubic centimetres of distilled water, and filter. Mix 100 cubic centimetres of this albuminous solution with 60 cubic centimetres of a five-per-cent. solution of corrosive sublimate, and 60 cubic centimetres of a 20-per-cent. solution of

It is necessary, in order to avoid accidents, to make these injections as deeply as possible. And here, as in the case of subcutaneous injections of chloroform, you ought to thrust your needle perpendicularly into the tissues; therefore, it is almost always in the hips that we make these injections. In the thousands of subcutaneous injections which Martineau has performed in the Hospital of Lourcine, he has never observed any grave accidents. At the same time, it is well to remember that in the majority of cases these injections are painful, and that they leave behind them an induration of tissue which lasts for some time. There are even patients, women especially, so hyperæsthetic that they cannot bear these injections. Despite these cases, which are exceptional, the hypodermic method is excellent, especially in hospital practice, being sure and speedy. In private practice this mode of treatment is more difficult to

common salt, and 80 cubic centimetres of distilled water. Let it stand two days, and filter with care. 20 cubic centimetres of this solution contain gr. ij$\frac{3}{10}$ of metallic mercury.

Terrillon has made trials of hypodermic injections of peptones of mercury. He made use of Bamberger's solution, which is as follows: Take of meat peptones, 1 gramme water, 50 cubic centimetres. Filter; and add: Solution of corrosive sublimate (1:500), 20 cubic centimetres; solution of chloride of sodium (20 per-cent.), 16 cubic centimetres. Distilled water sufficient to make 100 cubic centimetres.

Each cubic centimetre of this solution contains gr. $\frac{1}{6}$ of mercury. In combination with peptones, these injections cause no pain, if made deeply in the subcutaneous tissue. Delpech has advised the following formula for the preparation of mercuric ammoniacal peptones. Take of

Dried peptone (Catillon), 3 parts.
Chloride of ammonium, 3 parts.
Mercuric chloride 2 parts.
M.

This powder is one-fourth part corrosive sublimate; hence one gramme contains 25 centigrammes of corrosive sublimate. From this formula divers preparations are made:

1. Hypodermic injections—

℞ Powder of peptonate of mercury, 1 part.
Distilled water 50 parts.
Glycerine, 10 parts.
M.

Each syringeful of this solution corresponds to gr. $\frac{1}{6}$ of corrosive sublimate.

2. A solution which is taken internally—

℞ Powder of peptone of mercury, 1 part.
Distilled water, 200 parts.
Glycerine, 50 parts.
M.

Each gramme of this solution contains 1:1000 of corrosive sublimate.

3. Pills—

℞ Powder of peptonate of mercury, ʒ ss.
Opium, grs. viij.
Powder of guaiac, ʒ ss,
Powder of ext. licorice, sufficient to make 100 pills.

Each pill contains gr. $\frac{1}{12}$th grain of corrosive sublimate.

carry out; you ought then to reserve it exclusively for grave cases, where you want a prompt and energetic action, as in syphilis of the brain and spinal cord. These injections contain in each syringeful, as you well know, gr. $\frac{1}{6}$ of corrosive sublimate. When you do not wish to go to the trouble of preparing the rather complex solution of Delpech, you can prescribe subcutaneous injections as follows :

℞ Powdered peptone (Catillon), 3 parts.
Chloride of ammonium, pure, 3 parts.
Corrosive sublimate, 2 parts.
Glycerine, 50 parts,
Water, 150 parts.
M.

Each syringeful of this solution contains gr. $\frac{1}{6}$ of corrosive sublimate. These injections are practised every day or every second or third day, according to the urgency of the case, and I shall return presently to the doses, when I come to the syphilitic complications.

The respiratory method, which has for its basis mercurial inhalations, is of very ancient origin. It has been restored to practice the past few years by Langston Parker, of England, by Bumstead, of New York, and by Horteloup, in France. This method, which may be called *dermo-pulmonary*, consists in placing the patient in a box in which are burned troches containing cannabar or corrosive sublimate. The penetration of vapor is effected chiefly by the lungs. The box, being of loose construction, allows the fumes to escape into the outside air. I have never employed this *dermo*-pulmonary method, but it seems to me every way inferior to the hypodermic mode, and is certainly less precise and sure. In fact, this kind of treatment is not likely ever to be popular.

I come now to the last method of administration, namely, that by the alimentary canal, which is by far the most available and practical. Mercury is employed under all its forms;[1] metallic mercury, the most common preparation

[1] The following are some of the forms of administration of mercury by mouth :

1. *Blue pills.* The formula is too well known to need repetition here.

2. *Sedillot's pills.* Each pill contains gr. iss of mercurial ointment, with gr. j. of castile soap, and gr. $\frac{1}{2}$ of licorice powder.

3. *Bichloride of mercury.* Van Swieten's formula is as follows:

℞ Bichloride of mercury, 1 part.
Rectified spirits, 100 parts.
Pure water, 900 parts.
M.

One teaspoonful contains gr. $\frac{1}{12}$ of corrosive sublimate.

4. *Mauriac's modification of Van Swieten's liquor—*

℞ Spirits of peppermint, 4 parts.
Hydrarg. bichlorid., 1 part.
Alcohol, 95 parts.
Syrup of morphia, 250 parts.
Orange-flower water, 100 parts.
Distilled water, 50 parts.
M.

of which is the blue pill; bichloride of mercury, which is the active ingredient of the liquor of Van Swieten; the pills of Dupuytren; and the ordinary solution of the British Pharmacopœia; the protiodide (Ricord's pills); and the biniodide, which is contained in the syrup of Gibert. These are the forms most in use in this country. There are, however, a prodigious num-

This preparation is twice the strength of Van Swieten's.

5. *Dupuytren's pills*—

℞ Hydrarg. bichlorid., gr. $\frac{1}{6}$.
Ext. opii, gr. $\frac{1}{8}$.
Ext. guaiac, gr. $\frac{2}{8}$.
M. For one pill.

6. *English anti-venereal drops*—

℞ Crystallized perchloride of iron, 1 part.
Corrosive sublimate, 1 part.
Distilled water, 1000 parts.
M.

Every f 3 iij contains gr. $\frac{1}{8}$ of corrosive sublimate. A medium dose, one teaspoonful.

7. *Brazilian electuary of Carneiro, containing calomel*—

℞ Calomel, gr. xv.
Powdered sarsaparilla root, ʒ i.
Powdered senna, ʒ ss.
Simple syrup, sufficient to make an electuary.
M.

Every f 3 ijss contains gr. jss. of calomel. Full dose, 3 ijss.

8. *Ricord's pills*—

℞ Hydrarg. protiodid., gr. xlv.
Ext. lettuce, gr. xlv.
Ext. opii, gr. xv.
Ext. hemlock, 3 iss.
M. F. S. A. 60 pills.

9. *Formula of French Codex*—

℞ Hydrarg. protiodid. gr. $\frac{3}{4}$.
Ext. opii, gr. $\frac{1}{8}$.
Conserve of roses, gr. $\frac{1}{6}$.
Licorice root, sufficient for one pill.
M.

10. *Gibert's pills of biniodide*—

℞ Biniodide of mercury, gr. iss.
Iodide of potassium, gr. lxxv.
Pulv. acacia, gr. vijss.
M. F. S. A. 20 pills. Two of these pills contain gr. $\frac{1}{8}$ of biniodide of mercury.

11. *Syrup of Gibert*—

℞ Biniodide of mercury, 1 part.
Iodide of potassium, 50 parts.
Water, 50 parts.
Simple syrup, 2400 parts.
M. Every dessert spoonful contains gr. iv. of biniodide

ber of hydrargyrate preparations in the shops of pharmacists—pills, solutions, potions, pastilles—whose formulæ you will find in most of your treatises on syphilis. What salt of mercury ought you to choose? It may be replied that all the preparations I have just enumerated are suitable. At the same time, for my part, I prefer the bichloride and biniodide, to all others, and I consider the bichloride, and especially the solution of Van Swieten which contains it, as the most active in the first periods of syphilis, of all preparations given by the mouth. This preference is not only based on the results of my practice, but it is also in conformity with what we know of the introduction into the economy of mercury, which always enters the circulation in the state of bichloride. If you employ the bichloride, whether in the form of Dupuytren's pills or Van Swieten's liquor, I advise you always to administer these preparations with food or with milk; you will thus avoid, as far as possible, the irritant local action of corrosive sublimate on the alimentary mucous membrane. Such are the principles of the mercurial treatment of syphilis. I must now point out certain rules which should guide you in this treatment—when you ought to commence it, and when you ought to leave it off. But before proceeding to this part of my task, I must say a few words about the accessory modes of treatment.

Mercury is not the only metallic substance which has been prescribed for syphilis.[1] Chrestein and Legrand have proposed preparations of gold, Serres of silver, Hoefer of platinum, and even of copper. All these preparations have been successively abandoned, but the treatment which has had the most repute is the vegetal treatment.

The anti-mercurialists, struck by the ravages which mercury occasions, had essayed to substitute for it sudorifics, and from the sixteenth century, as a result of the influence of Delgado and Ulrich Von Hutten, guaiacum was considered as one of the most powerful anti-syphilitic medicines known. The success which was then obtained by the sudorific woods depended more on the severe regimen to which the patients were subjected than to any remedial qualities in the drugs.

Since then many attempts have been made to return to the vegetal treatment,[2] and numerous have been the compounds of indigenous or foreign herbs in decoctions and alcoholic tinctures which have been prescribed, but these

[1] Although Fracastor made mention of gold in the treatment of syphilis, it is to Chrestien, of Montpellier, that we owe the principal indications of this medication. This practitioner employed gold in a state of fine division; also the oxide and the perchloride of gold and sodium, both internally and externally, in frictions over the base of the tongue, etc. Legrand has spoken in high terms of the advantages of this medication, which he considers as specific in syphilis. (*a*)

[2] The sudorific or vegetal treatment of syphilis goes back to the 16th century, and was especially recommended by Delgado and Ulrich Von Hutten about the year 1517. Astruc has given at considerable length the principles of the treatment by guaiacum.

The decoction of guaiacum was thus prepared: In an earthen pot was infused one pound

(*a*) Legrand, on Metallic Gold and its Employ in Syphilis. Paris, 1836. Serres, on the Employment of Preparations of Silver in Venereal Diseases. Hoefer, Gaz. med. de Paris, 1840.