

tissue in infants affected by hereditary syphilis. Virchow<sup>1</sup> has also found small collections of the deposit peculiar to tertiary syphilis in the cerebral substance of children born of syphilitic mothers.

Hunter attributed the difference in the situation of early and late general symptoms to the influence of cold, which, as he supposed, rendered the more superficial parts of the body most susceptible to and earliest affected by the virus. This anatomical distinction, without Hunter's explanation, has been retained in Ricord's classification, in which the skin and mucous membranes on the one hand, and the osseous, fibrous, and cellular tissues on the other, are regarded as the exclusive seat of secondary and tertiary manifestations respectively. But this rule cannot always be maintained, since one of the earliest symptoms of general syphilis—preceding in many cases the eruption upon the skin—consists of pains resembling rheumatism, some of which are evidently seated in the periosteum (chiefly that of the cranium and in the neighborhood of the joints), and this fibrous tissue has been known to take an acute inflammatory action at this time. In order to avoid this difficulty, Bassereau asserts that general syphilis attacks indifferently the integumental, fibrous, and osseous structures in all periods of the disease, but that the more superficial portions of each are affected in the earlier and the deeper in the later stages.

Virchow<sup>2</sup> would exclude all consideration of situation from the classification of general symptoms, and has proposed a system based upon the nature of the pathological changes in the different lesions, but which is too widely at variance with the ideas at present received to meet with general adoption. Von Baerensprung<sup>3</sup> offers a similar classification, in which secondary symptoms are made to include those lesions which are characterized by hyperæmia and simple exudation; and tertiary symptoms those in which there is tubercular deposit.

But it is easier to pull down than it is to build up, and attempts in the latter direction may well be deferred until many preliminary points are settled. Meanwhile, we have every reason to be satisfied with the simple and natural chronological division which forms the basis of Ricord's classification, and which owes its excellence in a great measure to the keen power of observation of this truly eminent surgeon. The few errors which he introduced are not essential to the system, and may well be forgotten, when we recollect his important contributions to our knowledge of the natural history of syphilis.

The time of the appearance of any given syphilitic lesion will be influenced in a measure by the constitution of the patient, his mode of life, and the treatment to which he is or has been subjected, and can therefore be determined only approximately. The following table, compiled by M. Martin<sup>4</sup> from the statistics of McCarthy, Bassereau, Sigmund, and Fournier, is, however, of value in exhibiting the

<sup>1</sup> La syphilis constitutionnelle, traduit de l'allemand par le Dr. Picard, Paris, 1860, p. 4.

<sup>3</sup> Annales de la Charité, vi., p. 56, et vii., p. 173.

<sup>2</sup> Op. cit.

<sup>4</sup> De l'accident primitif de la syphilis constitutionnelle, Paris, 1863, p. 87.

usual period of development, following the appearance of the chancre, of the more important syphilitic lesions:

Symptoms.	Date of usual development.	Date of earliest development.	Date of latest development.
Roseola, . . . . .	45th day.	25th day.	12th month.
Papular eruption, . . . . .	65th "	28th "	12th "
Mucous patches, . . . . .	70th "	30th "	18th "
Secondary affections of the fauces, . . . . .	70th "	50th "	18th "
Vesicular eruption, . . . . .	90th "	55th "	6th "
Pustular eruption, . . . . .	80th "	45th "	4 years.
Rupia, . . . . .	2 years.	7th month.	4 "
Iritis, . . . . .	6th month.	60th day.	13th month.
Syphilitic sarcocele, . . . . .	12th "	6th month.	34th "
Periostosis, . . . . .	6th "	4th "	2 years.
Tubercular eruption, . . . . .	3 to 5 years.	3 years.	20 "
Serpiginous eruption, . . . . .	3 to 5 "	3 "	20 "
Gummy tumors, . . . . .	4 to 6 "	4 "	15 "
Onychia, . . . . .	4 to 6 "	3 "	22 "
True exostosis, . . . . .	4 to 6 "	2 "	20 "
Ostitis, changes in the bones and cartilages, . . . . .	3 to 4 "	2 "	41 "
Perforation or destruction of the velum palati, . . . . .	3 to 4 "	2 "	20 "

According to Bassereau's statistics, the administration of mercury for the primary lesion has a decided influence in delaying the appearance of secondary manifestations; and I am convinced from my own observations that this is the case. Admitting this to be true, it may seem strange that I should deny the power of the same agent to altogether prevent general manifestations. I am, however, irresistibly led to this conclusion, by the fact that I have never seen an unquestionable case of true chancre which was not followed, sooner or later, by some general lesion, no matter what treatment had been employed.

In most cases, when syphilis is abandoned to its natural course uninfluenced by treatment, the earliest general manifestations nearly or quite disappear spontaneously, and, after a time, are succeeded by another set, which, in its turn, may give place to a third, and so on; the number of successive outbreaks varying in different cases, and commonly being in proportion to the intensity of the action of the virus. Thus syphilis usually shows itself not in a continuous, but in an interrupted, succession of lesions—a fact of some importance, because too often the reappearance of syphilitic manifestations is regarded as a relapse, while it is really but the natural course of the disease.

In many cases, even in the absence of treatment, syphilis tends to self-limitation, and its lesions ultimately cease to appear, leaving the patient in a fair state of health.

## THE SOURCES OF SYPHILITIC CONTAGION.

The older writers on syphilis fully believed in the contagiousness not only of secondary lesions, but also of the sweat, saliva, semen, milk, blood, and even the breath of persons affected with general syphilis. Hunter, founding his opinion upon a few unsuccessful inoculations of the secretion of secondary lesions upon the persons bearing them, declared that the power of contagion was confined to the primary sore. Auto-inoculations, similar to those of Hunter, were repeated in thousands of instances by Ricord, and, in imitation of his example, by numerous surgeons in various parts of the world, the results of which were uniformly unsuccessful with scarcely an exception worthy of notice. On the other hand, the chancreoid was regarded by Ricord and by the profession generally as the chancre-type, and its secretion was found to be inoculable with the greatest facility. The inference which was drawn was a natural one, viz., that a radical distinction existed between primary and secondary lesions in the contagiousness of the former and the incommunicable character of the latter; and the zeal, energy, and ability with which this idea was for many years defended are known to the whole medical world.

The plausibility of this evidence, the immense number and uniform results of the experiments resorted to, the keen powers of observation, ingenious reasoning, attractive manners, and evident sincerity of the surgeon of the Hôpital du Midi, united in adding weight to a doctrine which had already been sanctioned by the great name of Hunter, and which was consequently for a time received as beyond dispute. Yet cases in apparent contradiction to Ricord's "law" were met with by many careful observers, especially in infants affected with hereditary syphilis, whose early age, incapacitating them from sexual intercourse, greatly diminished the chances of error of observation; and although instances of the transmission of secondary lesions from the nursing to the nurse, and vice versa, were explained away with great ingenuity by Ricord and his adherents, yet they gradually came to be admitted by the majority of the profession. At the same time it was felt to be highly desirable to demonstrate this power of contagion by experimental inoculation, and thus place it beyond a doubt; and afterwards to study the phenomena of the process and compare them with those attending the evolution of general syphilis when originating in a chancre. Until this was done, the subject was likely to remain an open question.

This test, however, could not readily be applied. Ricord and his school had confined their inoculations to persons already infected, and it was generally admitted that further experiments, in order to be decisive, must be made upon those who were free from syphilitic taint—a course which could not be justified in a moral point of view even for the purpose of advancing science. Wallace had already, in 1835, succeeded in inoculating the secretion of condylomata upon healthy individuals, but the want of precision in his observations

rendered them of little value. Subsequent inoculations, however, by Waller of Prague, Rinecker of Würzburg, a surgeon of the Palatinate who concealed his name, Gibert and Vidal of Paris, and others, settled this question in favor of the contagiousness of secondary lesions, and even of the blood of syphilitics, for all time. The novelty of this subject at the time of the publication of the earlier editions of this work, led me to give the experiments referred to in detail. These will now be omitted, and I shall content myself with a bare statement of what must be regarded as proved both by clinical observation and artificial experiment, and what, moreover, is universally admitted at the present day.

We must admit as sources of syphilitic contagion—

1. The secretion and the organic débris of the primary lesion or chancre.
2. The same of any of the secondary lesions of syphilis, among which the various forms of mucous patches are eminently contagious.
3. The blood of persons in the secondary stage of syphilis. For the absolute demonstration of this fact by actual experiment in 1862, we are indebted to Dr. Pellizari, Clinical Professor of Venereal Diseases at the École Pratique of Florence.

It is generally believed that tertiary lesions are not inoculable, and perhaps no cases have as yet been reported with sufficient accuracy of detail to prove the contrary; but, as the boundary line between secondary and tertiary syphilis is not definitely defined, so are the limits of contagion to some degree uncertain.

Admitting the contagiousness of the blood of syphilitic persons, we might from *a priori* reasoning suppose that the various fluids which are secreted from the blood, as the saliva, milk, sweat, and semen, are also contagious, and this was the belief of the earlier writers on syphilis. This supposition, however, is not in accordance with clinical observation, and has been disproved by actual experiment with a number of the secretions mentioned. Diday inoculated two healthy persons with the lachrymal secretion taken from the eye of a patient in the height of secondary manifestations; the result was negative.<sup>1</sup>

The non-inoculability of the semen of syphilitics was fully proven in a number of experiments made by Mireur.<sup>2</sup> A number of cases, which have appeared in medical journals within a few years, and which have been supposed by their authors to establish the contrary, have been so loosely observed as to deprive them of any claim to serious consideration.

The innocuity of the milk is proved by the fact, that a mother who contracts syphilis after the birth of her child, may nurse that child with impunity, provided she has no lesion upon her breasts. Moreover, Pardova,<sup>3</sup> in 1866, attempted to inoculate the milk of eight

<sup>1</sup> Gaz. méd. de Lyon, No. 3, 1865.

<sup>2</sup> Ann. de derm. et syph., Paris, No. 6, tome viii., 1877.

<sup>3</sup> Gior. ital. d. mal. ven., Milano, t. ii., p. 153, 1867.

syphilitic women, by pricking it into the skin, by applying it to a vesicated surface, and even by hypodermic injection, and in all without effect.

In short, we have no reason to believe that any of the normal secretions of syphilitic persons, when free from admixture with the secretions of secondary lesions or with the blood—as, for instance, saliva, not mixed with the secretion of buccal mucous patches,—are contagious.

#### THE MODES OF SYPHILITIC CONTAGION.

Syphilitic contagion may be direct or mediate, like that of the chancre; and much that has already been said in reference to the latter (see Part II., Chap. I.), is here applicable.

Direct contagion takes place most frequently from the genital organs of one person to those of another in sexual congress, and it is often the result of unnatural and beastly modes of indulgence between persons of the opposite or the same sex. Hence arise many chancres of the anus, of the tongue, of the fold between the breast and side of the chest, etc., etc. Chancres of the tonsils are not infrequently met with due to bestial practices.

More innocently, contagion takes place in the contact of mouth to mouth, as in the act of kissing. The most innocent girls are thus often contaminated by the freedom, which is unfortunately common in some families, of saluting their male visitors in this manner. The frequency with which mucous patches in the mouths of sucklings will infect the nipples of a wet-nurse, is well known, and the same is sometimes met with in adults. I recently prohibited a man who had contracted syphilis from having connection with his wife. He obeyed my instructions, but, thinking it safe to suck her nipple, gave her a chancre in that situation. It is commonly by direct contagion, that so many surgeons, and especially accoucheurs, contract chancres upon the fingers from contact with the lesions of syphilis upon their patients. The number of such cases is greater than is commonly supposed, for the unfortunate victims, although innocent, are usually most careful to conceal their misfortune. I have known dentists to suffer the same fate.

Syphilis is also said to have been conveyed in the rite of circumcision, from mucous patches in the mouth of the operator to the wound upon the infant's penis, which it is customary to suck, and Sigmund has reported a case of this kind. In a number of cases, reported by me, I was unable to find sufficient evidence of such transmission, although its possibility cannot be doubted.<sup>1</sup>

Mediate contagion may occur from the passage of a cigar or a pipe from mouth to mouth; from the use of common utensils, as a tooth-brush,<sup>2</sup> wine-glass, a cup, a spoon, etc., etc., by different persons;

<sup>1</sup> New York M. J., Dec., 1873.

<sup>2</sup> A case of syphilitic inoculation by a tooth-brush, by Dr. E. B. Baxter, Lancet, Lond., May 31, 1879. We have also met with a case in which this was probably the mode of contagion.

from sleeping in the same bed; from matter conveyed on certain tools used in manufacture, as the pipes of glass-blowers (many instances of which have been recorded as having occurred in France and have led to the passage of a law that each workman should have his own mouth-piece). Washing utensils used in common, surgical appliances, as sponges, bandages, etc., and surgical instruments, especially the Eustachian catheter, and cupping instruments, are also recorded as having been the medium of contagion.

In 1877, Albert Josias<sup>1</sup> reported a case of the transmission of syphilis by tattooing, the instrument used for the purpose having first been moistened in the mouth of the operator, who had mucous patches in the buccal cavity. Since then Drs. Maury and Dulles<sup>2</sup> have reported fifteen similar cases occurring in this country.

At a late meeting of the Society of Public Medicine, in Paris, Dr. Galippe related a number of cases of the transmission of syphilis through children's toys, as whistles and trumpets, which had been blown upon by the vendor before being passed to the child. But the different ways in which mediate contagion may take place are so self-evident, that it is not necessary to enter into them more fully. I shall, therefore, only briefly refer to one which has attracted much attention and which should ever be borne in mind; I refer to syphilitic contagion conveyed on the point of the lancet in performing vaccination.

There is every reason to believe, as stated in an admirable paper by Viennois,<sup>3</sup> that the agent of contagion in these cases is not the lymph taken from the arm of the syphilitic infant, but the blood which is often drawn in collecting the lymph, especially toward the close of the operation if a number of punctures have been made. Moreover, because an infant develops general syphilis after vaccination, it is not always true that the syphilis is due to the vaccination, since this disease may have been inherited from its parents and its appearance have been merely hastened by the irritation of the integument induced by the vaccination. These conclusions are thus formulated by M. Viennois:

1. Vaccination with pure vaccine matter is sometimes the exciting cause of the appearance of a syphilitic eruption in infants already under the syphilitic diathesis; in the same manner that it gives rise to non-specific eruptions in strumous subjects. The history of the case and the order of evolution of the symptoms are generally sufficient to establish the diagnosis. For instance, the appearance of the eruption within a few days or weeks after the vaccination, without the ordinary period of incubation of syphilis, will render it probable that the disease was already latent in the system.

2. Syphilis cannot be transmitted to a healthy person by the inoculation of vaccine matter taken from a syphilitic subject, unless the lancet at the same time be charged with blood; in which case a

<sup>1</sup> Progrès méd., Par., 1877, p. 205.

<sup>2</sup> Am. J. M. Sc., Phila., Jan., 1878.

<sup>3</sup> Arch. gén. de méd., Paris, juin, 1860.

chancre is produced, followed by general symptoms in their usual order of evolution.

It is still believed by some that, in these cases, the blood is not the only vehicle of contagion, and that epidermic scales, or leucocytes, or the secretion of an ulcer underlying the vaccine vesicle (Rinecker<sup>1</sup>), may also be responsible.

Two remarkable instances of the transmission of syphilis by vaccination are reported by M. Lecoq.<sup>2</sup> By far the most important and interesting series of cases, however, occurred at Rivalta, Italy, in which forty-six out of sixty-three children who were vaccinated became syphilitic and transmitted the disease to nurses, mothers, fathers, brothers, and sisters, making a total of eighty persons. In these cases, also, blood is said to have been drawn with the lymph from the arm of the first vaccinifer, and the initial lesions in those who received the poison were indurated ulcers (chancres), which were preceded by a period of incubation averaging twenty days.<sup>3</sup>

Numerous instances of a similar character, in some of which the disease spread to a large number of persons, have been collected by M. Viennois, and are sufficient to show that although vaccination is commonly a harmless operation, yet that it may, if proper precaution be omitted, be the means of transmitting a fearful constitutional disease.

In the above remarks on "vaccino-syphilis," it will be seen that reference has only been made to the conveyance of syphilis from the person from whom the lymph was taken to the person upon whom the lymph was implanted. But there is still another danger in vaccination which had nearly or entirely escaped notice, until attention was called to it by me: I refer to the transmission of syphilis by using the same instrument uncleaned upon a number of individuals in succession, one of whom is syphilitic. In performing vaccination in this manner, as is often done in charity institutions, the vaccine matter may be never so pure, but the scarificator may be contaminated by contact with one person under the influence of syphilis and convey the disease to the next. In the case reported,<sup>4</sup> a number of the inmates of the Penitentiary, Blackwell's Island, were ordered to be vaccinated. The vaccine was in quill form, and furnished by the Board of Health. The physician vaccinated about twenty persons in succession, using the same scarificator without cleansing it. The operation had been done upon six persons, when a young prostitute affected with syphilis was vaccinated; next to her an infant aged nine months. All did well with the exception of this infant, in whom a chancre was developed at the point of inoculation, followed by the usual train of general lesions.

<sup>1</sup> Vrtljschr. f. Dermat., Wien, 1878, p. 25.

<sup>2</sup> Guyenot, Thèse de Paris, 1859. See also Gaz. hebd. méd., Paris, 27 janv., 1860.

<sup>3</sup> For an able résumé of these cases, see Mr. Henry Lee's Lectures on Syphilitic Inoculation and its Relations to Vaccination, London Lancet, 1862.

<sup>4</sup> Arch. of Dermatol., N. Y., vol. ii., 1876, p. 203.

There is a possibility that syphilis may be communicated by means of cigars. Bulkley<sup>1</sup> reports the cases of two physicians, who had the initial lesion on the lip, the contagion of which he thinks was acquired in smoking. It is known that in the manufacture of cigars it is the custom of some persons to moisten the end with their saliva in order to give it a proper point. Now should such persons be affected with mucous patches or any ulcerating lesion of syphilis, it is probable that the tobacco leaf would become permeated with the poison. How long the virus may, under such circumstances, retain its contagious properties we do not know. I have now, in my wards at Charity Hospital, a young female cigar-maker, who has an immense syphilitic chancre on her lower lip, which she contracted from a drinking-cup in use in the factory. I am informed that in the larger establishments a gum paste is used in finishing the pointed end, and that operatives are forbidden to apply the cigars to their mouths. Considering the extent of cigar smoking, this accident is certainly a very great rarity. Bulkley advises by way of prophylaxis the use of a cigar-holder, or the covering of the pointed end of the cigar with thin paper.

The probability of the communication of syphilis by means of the razor is brought to mind by two cases reported by Després.<sup>2</sup> The first case was that of a man, 54 years of age, who noticed after being shaved by a barber that he had three small cuts on the chin. Two weeks later, he having had no sexual intercourse in ten weeks, these began to swell and in a short time became ulcerated indurations, which in six weeks were followed by general manifestations of syphilis. The second case was similar, with the exception that the patient did not remember any previous injury to the skin. Not long ago I had under my care a patient who had the initial lesion on the upper part of the chin in which shaving was the only applicable mode of contagion.

Rohé reports an instance of syphilitic infection by means of a bite. A man was bitten on the left side of the nose while fighting. The wound healed, but in a month the bitten part became red, painful and swollen, and upon it developed a well-marked hard chancre. In a few weeks the submaxillary glands became enlarged, especially on the left side. Later on he had general manifestations of syphilis. There was no lesion of the penis. The man who bit this patient was found to have a mucous patch near the left labial commissure. Roliet<sup>3</sup> reported a similar case. Zeissl<sup>4</sup> also reports a number of similar interesting and rather unusual cases. In one a man was bitten on the hand during a drunken spree; in a second the chancre followed a kiss on the cheek; a third was that of a woman who

<sup>1</sup> Archives of Dermatology, vol. 5, page 343, 1879.

<sup>2</sup> Journal des Connaissances Méd., Dec. 2d, 1880.

<sup>3</sup> Archives of Dermatology, vol. 4, 1878.

<sup>4</sup> All. Wien. Med. Zeit., Nos. 2 and 3, June, 1878.