KLOTZ (H. G.)

ON THE OCCURRENCE OF TERTIARY LESIONS OF SYPHILIS AS THE RESULT OF DIRECT LOCAL INFECTION, WITH GENERAL REMARKS ON SYPHILIS AS AN INFECTIOUS DISEASE.

BY

HERMANN G. KLOTZ, M.D.,

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ON THE OCCURRENCE OF TERTIARY LESIONS OF SYPHILIS AS THE RESULT OF DIRECT LOCAL INFECTION, WITH GENERAL REMARKS ON SYPHILIS AS AN INFECTIOUS DISEASE.[1]

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IT is a well-known fact, that in numerous instances, where so-called tertiary manifestations of syphilis are observed, neither the history nor the most minute and painstaking examination of the patient is able to reveal or even to intimate any trace or sign of primary and secondary symptoms ever having preceded. The lesions themselves in such cases do not differ at all from those observed in patients who went through the regulation course of primary and secondary stages, neither in their outward features nor in their location, in fact all organs which usually become the seat of tertiary symptoms, may be found affected. Feibes of Heidelberg, who has published a number of cases of "Syphilis occulta," as he calls them, from the clinic of Prof. Erb (*D. Archiv. klin. Medic.* XLVIII) enumerates a great variety of tertiary symptoms, sometimes restricted to a single organ, sometimes affecting different and distant localities, and combined with general cachexia and marasmus. It seems, however, that certain forms of the disease are found with particular frequency or almost regularity, prominently among them the serpiginous syphilide, a manifestation so characteristic that Ricord has called it "*la signature de la syphilis.*" It is remarkable that this serpiginous syphilide is very often the only form in which the disease appears in an individual, that it is generally confined to only one or to but very few localities on the same patient, that its

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peripheral progress is extremely slow, extending over a number of years, ten, fifteen years and longer, without, as a rule, materially affecting the general health ; in fact they are often found on men or women of splendid physical development and vigorous strength, who bear all kinds of hard work and hard life without the slightest detriment to health, and often are so little affected by their skin affection, that they are not very anxious to have them cured. O. Lassar, of Berlin in a paper : Zur Anamnese der Spät Syphilide (*Berl. klin. Wochenschrift*, 1892, No. 29) states, that among nearly 200 cases of late syphilides observed by him within the last two years, in more than sixty, that is, about 30 per cent. the history absolutely failed to reveal the presence of previous infection with syphilis. If I could go over all similar cases which I have observed myself, I have no doubt that my cipher would not differ much from Lassar's, the frequent absence of any history of early syphilis in cases of serpiginous syphilides, destructive affections of the nose and face, etc., having early attracted my attention. We are universally and absolutely taught that all persons affected with tertiary lesions of syphilis, at some earlier period of their life, must have been infected with either hereditary or acquired syphilis and must have passed through a primary and secondary stage, the symptoms of which were overlooked owing to their small intensity or to insufficient observation. This is a doctrine of faith rather than one supported by indisputable facts or by scientific proofs of any kind. We are used in practice to see every case of infection followed by a more or less distinct primary lesion and by a certain amount of secondary symptoms ; there seem to exist exceptions from this rule in both stages, but they are so rare that they cannot invalidate its stability. Still we are expected to believe that in 30 per cent. of Lassar's cases of serpiginous syphilides, the entire primary and secondary stage were overlooked, or that the patients were all persistent liars. Or must we accept the explanation given by Lassar himself, which I do not believe will find general approval? He says in his paper: "Syphilis can creep into the system without establishing itself in the usual manner at the point of entrance. An individual primary lesion under any circumstances means syphilis, but syphilis does not always require a tangible initial focus, to be received into the lymphatic system. Every single irregular sexual intercourse, even in the absence of a marked primary symptom, may become the occasion of infection." This is but the natural outgrowth of the

arbitrary doctrine which rules our teaching. If you follow up this opinion a little farther in its consequences, you will hardly be able to find a single person who might claim to be free of syphilitic infection. E. Finger of Vienna, in a paper to which I shall repeatedly refer later on, entitled: Syphilis as an infectious disease from the standpoint of modern bacteriology, (*Archiv. of Dermatol.* 1890, XXII, p. 331 seq.) asserts that tertiary manifestations may appear in individuals who never before had exhibited the signs of virulent infection, primary and secondary symptoms, but who had acquired immunity, namely first in mothers, who have born children hereditarily syphilitic from the father without having become infected themselves, and second in the children of syphilitic parents. In support of this opinion he cites numerous authors, principally Behrend and Hutchinson, who first published such observations, Diday, Baerensprung and others, and then goes on to say: "Whenever objection was made against these observations, the general drift was always, that tertiary syphilis, without the preceding of primary and secondary symptoms, was simply impossible; that the primary and secondary symptoms necessarily were overlooked by the authors in consequence of insufficient or interrupted observation. Such a criticism," he continues, "with due reference to strict critique as the duty of scientific study, goes too far and is not scientific any longer, if it simply throws overboard whatever does not fit within the mold of their once accepted system." Although I do not deny, that in a large number of instances, particularly in females, the primary lesion and even the secondary symptoms following the proper period of incubation, may be overlooked, it is improbable that this should happen in so large a number of cases, and often under circumstances, which seem to render infection by sexual intercourse almost an impossibility. Extragenital infection, although often enough not recognized, at least not at the proper time, in most instances will leave the recollection of the presence of some lesion or a scar, which would direct the investigation to the real source of the infection. Not so rarely, however, the history given by the patients who, as a rule, are not conscious or suspicious that they bear any symptom of syphilis and therefore need not be suspected of hunting up an excuse for any indiscretion, points most directly to the origin of their tertiary lesions from some trauma, or from the direct or indirect contact with some object or person, which had aroused their suspicion. It is true, exactly the same thing will occur with patients who

give a clear history of primary and secondary symptoms; the influence of injury and trauma of every kind on the provocation of tertiary lesions undoubtedly exists, vaccination among others often playing an active part. Haslund (The origin of tertiary syphilis, *Brit. Journal of Dermatology*, July, 1892, *Monatsh. f. prakt. Dermatol.* XVI, 3 Febr., 93), reports the case of a boy, twelve years old, the son of a notoriously syphilitic father, who alone on the strength of a slight impression of the nose and deep horizontal furrows of two upper and the four lower incisors, and the two lower canines (by no means typical specimens of Hutchinson's teeth) is suspected of hereditary syphilis. It is, however, reported, that he did not exhibit any syphilitic manifestations until he was six or seven years old, when he was vaccinated, and later on a skin affection developed, starting from the vaccination pustules and steadily progressing. Several years afterwards similar lesions appeared on the right elbow and on the right leg. In this case we have at least a shadow of the probability of hereditary syphilis, but not the slightest proof can be found in another case, which Haslund has placed at the head of his paper. A cicatrizing serpiginous syphilide extending on the upper and outer parts of the left arm over the left shoulder, had immediately started from vaccination. The bearer was a man of sixty years, sound in every respect, vigorous and well nourished. He stated that he had never had any illness and was not aware of having ever suffered from syphilis. He admits that he had some venereal affections in his early youth as well as sores on the genitals, but they were most insignificant, and he had never undergone any anti-syphilitic treatment. The present affection of the skin commenced in 1875, when he was re-vaccinated with a positive result. The pustules pursued their normal course, but close to them protuberances sprang up, ulcerated and formed similar sores, which steadily increased for years, the old sores healing, while new protuberances appeared around them. He never applied for medical advice as he suffered no pain nor was he ever prevented from doing his work.

If you look upon a case like this without any prejudice and are to draw a simple logical conclusion, the nearest one would certainly be, that with the act or at the time of the vaccination the patient was inoculated with some virus which produced a local affection of the skin, which since, for thirteen or fourteen years has remained local and progressed locally only without ever affecting the patient's general health. Haslund, of course,

draws the usual conclusion, simply because our present knowledge seems to admit of no other explanation. Similar cases are by no means so very rare among the numerous ones of late syphilitic manifestations without a history of previous syphilis, although it is not often possible to fix the precise date or the precise act so definitely as in the vaccination cases, but it is obvious that numerous opportunities are offering themselves in daily life. In my own experience I have met not a few cases, in which the history made a local inoculation and the immediate development of tertiary symptoms on and around a point of infection much more probable than the acquisition of syphilis in earlier life with unobserved primary and secondary symptoms. Most of these cases having occurred in dispensary practice, I am not in possession of notes sufficiently exact to present them here. I shall briefly mention, however, two, occurring in private practice within the last few years. One patient was an elderly farmer, from New Jersey, who has always enjoyed good health, has brought up a family of healthy children and who certainly had no hereditary syphilis, his parents having been known to me for years, always enjoying excellent health and having died at a very ripe age without ever having exhibited signs of constitutional disease. This farmer consulted me for an affection of the scalp, which I easily recognized as a gummatous syphilide. For certain reasons I did not tell him what his disease was, and avoided any unnecessary questioning, but simply prescribed for him. Before he left my office, he mentioned that several years ago he had a farmhand, on whose head he had noticed sores. He had occasionally used this man's head-covers and soon after had noticed the eruption on his own scalp. This remark, coming from the patient under circumstances which did not call for any excuse or explanation, was sufficiently interesting to force upon my mind the idea of the possibility of a local infection. In the second case which came under my observation last summer, the affection was likewise one of gummata of the scalp. The intelligence, education and position in life of the patient rendered the overlooking of primary and secondary symptoms of syphilis on himself or the willful concealment of the same extremely improbable. The affection had been present for some time and had been treated locally by several physicians without any decided result. The patient came to me with the remark that syphilis was out of the question. The character of the lesions was by no means as obvious as in the other case, they looked at first like the

remnants of sluggish subcutaneous abscesses, and the circumstance that they apparently healed at first under the application of injections of mild solutions of corrosive sublimate into the surrounding tissue seemed to confirm the simple septic nature of the process without more than suggesting syphilis. But some recurrent lesions distinctly assumed the characteristic appearance of small cutaneous and subcutaneous gummata. They finally healed within a very short time after five intra-muscular injections of the salicylate of mercury, containing altogether not more than three and a half grains of this salt, without any local treatment. It is impossible to trace the infection to any certain occasion—the patient is not infrequently brought into contact with syphilitic people—opportunities for the infection of the scalp by his own fingers in scratching his head, etc., were amply present.

That these cases in themselves do not prove anything, I am well aware, but you will admit, I believe, that they furnish some reason to justify the consideration of the question, whether such a local inoculation in itself is really absolutely impossible or improbable, particularly, if you remember, that within the last fifteen or twenty years much light has unexpectedly been thrown, by recent discoveries in bacteriology, etc., upon the nature of certain diseases ; how many facts formerly considered impossible, have been proved to exist; how many theories and opinions formerly accepted without any doubt and apparently impregnable, have been overthrown and fallen to pieces, while others, apparently chimerical when first advanced, have taken their place. Indeed, if we look upon tuberculosis, particularly upon the tuberculous affections of the skin, as they now stand before our eyes, we may well take courage to question the absolute validity of the now prevailing opinion regarding tertiary syphilitic manifestations without a connecting history.

The tertiary lesions clinically bear the closest resemblance to the local manifestations of tuberculosis, so much so that in many instances the differentiation between them becomes extremely difficult and may require the test of specific treatment to decide their nature. Lupus, tuberculosis verrucosa cutis, tuberculosis ulcerosa proper and scrofuloderma, the principal forms of tuberculosis of the skin, have their counterparts in the tertiary syphilide, in the ulcerating serpiginous syphilide often called lupus syphiliticus, in some of the more resistant forms of tubercular syphilide, in the deep gummatous ulcer, in the gumma itself. The same similarity occurs in the affections of the

mucous membranes, particularly of the throat, mouth, tongue and larynx, in the affections of the bones and joints, and in the visceral lesions of syphilis. If then it has been proven, apparently beyond doubt, that in all these lesions of tuberculosis the bacillus is not only present, but has to be considered the etiological factor in their production, it will not seem absurd any longer to suppose that the corresponding lesions of syphilis are produced by a micro-organism similar in nature and similar in its action to that of tuberculosis, it will rather appear to be justified to look for the existence of such a parasite, *one*, however, *not identical* with *that of active* or *virulent syphilis itself*.

Over and over again, syphilis is compared and classed with tuberculosis, but in reality it is only tertiary syphilis which bears a close resemblance, while syphilis in its early stages is much more nearly related to the so called acute exanthemata, a point to which I shall return later on. Tertiary syphilitic lesions are almost unanimously considered to be non-contagious, in the sense, however, that they do not produce infection with the virus of syphilis proper and do not cause primary and secondary symptoms. But this opinion is not implicitly received by all authors.

Taylor (Bumstead & Taylor, 5th ed., p. 459), says: "The inoculability of tertiary symptoms has never been tested upon persons free from syphilitic taint, and its possibility therefore, may yet be demonstrated, as that of secondary symptoms has been. Their transmission by hereditary descent in a few instances, still preserving their peculiar type, is a known fact." Finger, v. i., p. 358, places it as an undisputed fact that tertiary products are not contagious, partly on the strength of clinical experience of men like Baerensprung, Diday and others, and partly on that of experiments with inoculation on healthy persons. He cites Ricord, Diday, Larrhos, Baerensprung, Tantucci, Profeta and Boeck as having made inoculations on healthy persons with negative results. Some of these experiments seem to be of doubtful value, but even accepting them without reserve, still as M. Zeissl like Taylor maintains, as well as it has taken some time before the contagiousness of secondary lesions was universally acknowledged, it may be proven at any time that material from tertiary manifestations can be inoculated. A. Neisser, in *Ziemssen's Hautkrankheiten* I., p. 681, still considers it possible that gummatous substances may be infectious and cites experiments made by Haensell (*Graefe's*

Archiv. f. Ophthalmologie, XXVII., 2 p. 43), on the eyes of rabbits. Haensell claims that four months after the inoculation with gummatous substances, he observed several rather large, yellowish, vascularized nodes, which were gummatous tumors starting from the corpus ciliare, as anatomical examination afterwards showed. The incubation was longer than usual in tuberculosis, the character of the nodes more chronic and blood vessels were present, which are entirely absent in tuberculosis. These experiments are so exceptional, however, that I do not wish to place too much value upon them. I shall rather point to the difficulties which present themselves to the solution of important questions in relation to local tuberculosis, about which we have so much more positive knowledge. For instance, we know but very little in which way the infection takes place which produces lupus; almost the only thing we know is, that ample opportunity for such inoculation was present in most of the cases. Is is impossible to fix the precise date of the event. We have yet no positive knowledge of the period of incubation nor sufficient data as to the appearances of the earliest local manifestations after inoculation, and we cannot even now answer with certainty whether lupus is due to direct inoculation, or to infection from contiguous tuberculous organs, as joints, lymphatic glands, etc., or whether it is due to hematogene tuberculous infection in all or in the majority of cases. Almost everything that has just been said in regard to tuberculosis might hold good for the manifestations of tertiary syphilis, which clinically and anatomically show such great resemblance to the tuberculous affections. I want to call particular attention to the different modes of the origin of tuberculous lesions; syphilitic lesions would be produced in exactly the same way. In analogy with the tuberculous manifestations, the presence of a bacillus or other micro-organism in syphilis similar to that of tuberculosis, would easily explain the origin and the clinical character of the tertiary syphilitic manifestations, not only in cases where a primary and secondary stage have been observed in the regular order of things, but also in those cases in which the connecting history is missing. Such a bacillus, it is true, has with certainty not yet been found, although I cannot omit to call attention to the investigations of Birch-Hirschfeld (*Bacterien in syphilit. Neubildungen, Centrabbl. f. d. Medic. Wissensch*, 1883, 33, 44)which have been cited by Neisser as of great importance, referring mostly to tertiary lesions. But you certainly cannot deny the possi-

bility that it will be found in the future, not more than you can deny that the bacillus of tuberculosis has actually been found in lupus and other tuberculous affections.

Assuming then the existence of such a bacillus, it looks almost as if tertiary syphilis would have to be considered as a disease of its own, separated from syphilis proper by its different origin and clinical character. For, as I have stated before, this bacillus or micro-organism would not be identical with that of early and virulent syphilis, certainly not identical in its action. The opinions of different authors on the relations of the tertiary manifestations to syphilis are by no means unanimous nor of a decided nature, and indeed, very little positive knowledge exists on this important question, hypothetical, sometimes very uncertain or obscure opinions, taking the place of positive science. Following Finger, who, in the paper mentioned before, reviews the position of a number of authors, it is accepted almost everywhere in literature, that tertiary manifestations do not bear the same etiological relations towards the virus as the primary and secondary ones. Generally we meet with the tendency to consider the appearance of tertiary symptoms as an abnormity, as an irregular development which is not due to the virus alone but to other more accidental causes. It is impossible to cite here the opinions of every single author, but it appears that the majority, on the strength of clinical experience, do not consider the tertiary stage as a direct consequence of the action of the syphilitic virus, but as a consecutive specific sequel or as a diathesis, that in this stage the orgiinal virus has become completely eliminated or extinct, or at least, that the tissues have undergone a modification in consequence of the preceding process of syphilis. Finger, himself, adduces several reasons in favor of the position that the tertiary manifestations cannot be produced in the same manner by the virus of syphilis as the primary and secondary ones. Some of his arguments are by no means indisputable, but cannot be all considered in this paper. The principal purpose of Finger's paper is to call attention to the importance of the effects of the products of tissue change resulting from the virus of syphilis besides the effects which are due to the micro-organisms themselves. He attributes to the chemical products the general symptoms preceding and accompanying the general outbreak of secondary syphilis on the one side and immunity from infection with the virus of syphilis on the other; the latter,

under certain circumstances, cited above, may be acquired without the previous occurrence of primary and secondary symptoms. So far, I am ready to accept Finger's opinion, although hypothetical, as he avows himself. But he further concludes, that tertiary manifestations and products of tissue change must have an intimate etiological connection, because the former, like immunity, the product of the toxines, can occur independently of the previous appearance of primary and secondary symptoms under the same conditions as immunity; and second, because tertiary symptoms like the general symptoms of the early stage, which are equally due to the intoxication with the toxines, show the same prompt chemical and therapeutical reaction against iodine and its preparations, while the virulent primary and secondary symptoms are readily influenced by mercury and not by iodine. Even admitting as proven the cases of the appearance of tertiary symptoms in mothers immune by the bearing of syphilitic children, which, as has been mentioned, has been doubted by some authors, it does not appear that these cases are frequent enough to establish a rule or general law. In regard to Finger's second argument, the chemical reaction against iodine, I cannot consider it a very strong one. In reality no such decided difference in the action of mercury and iodine on the products of syphilis in the different stages does exist, as to base upon it an actual law of chemical reaction; early secondary symptoms may disappear and quite often very promptly do disappear under treatment with iodide of potassium alone, and on the contrary, numerous tertiary affections are readily affected by mercury, sometimes where iodine does not exert any beneficial action at all. I therefore cannot consider Finger's opinion as proven or even as rendered very plausible, much less can I see a convincing argument in his further conclusions, when he says: "Chronic intoxication with the products of tissue change due to the syphilitic virus may create that modification of the reaction of the organism, which we design as immunity. If the toxines are less virulent and the organism is more resistant, they may be restricted to the reaction of immunity. But if the virulence of the chemical products is greater and the reactiveness of the organism lower, the modification of reaction becomes marked, it turns into a specific cachexia, into a sequel." (The word "Umstimmung", used in German, is difficult to translate; modification does not render its exact meaning; a more literal translation of this word of rather uncertain significance would be "change of

pitch.") I must confess, that I cannot understand Finger's reasoning or forming conclusions; it seems unintelligible that the same cause, the intoxication with the products of tissue change, should in a mild degree cause immunity, thus acting rather beneficially, and in a higher one should cause the local processes constituting the tertiary symptoms in all its disastrous forms, even if we accept the existence of some local irritating factor to account for the production of the local lesion. Experience, on the contrary, shows that the most aggravated forms of tertiary symptoms are frequently observed in cases in which the primary and secondary symptoms including the general symptoms have been very mild, so that only a moderate degree af virulency would have to be expected, while severe general symptoms, pronounced anæmia, high fever, low state of nutrition accompanying and succeeding the secondary eruption, are by no means regularly followed by tertiary manifestations; that a severe and prolonged secondary stage renders the appearance of tertiary syphilis less probable. While I therefore agree with Finger on the importance of the toxines for the production of the general symptoms of the early stages and on immunity, I cannot see that he has brought forward sufficient arguments in favor of the hypothesis that the tertiary symptoms are also a product of the chemical action of the virus of syphilis. I am inclined, however, to recognize the influence of the toxines as the active factor in the production of certain conditions, mostly visceral lesions, which are generally attributed to syphilis, but in which the anatomical changes do not seem to differ at all from the same conditions if caused by other agencies, as intoxication with alcohol or lead, or probably by gout, etc., and which do not exhibit any really specific qualities. I am speaking of the diffuse interstitial inflammation with the formation of sclerotic connective tissue in the kidneys, liver and spleen, so often associated together, similar processes in the lungs, and other organs, which may be found alone or simultaneously with characteristic gummatous formations, but particularly of the chronic diffuse systemic affections of the central nervous organs which are met with in syphilitic persons with such regularity that their more or less intimate relations to syphilis can hardly be considered doubtful. It is certainly not justified to count these affections among the tertiary manifestations of syphilis with which they have nothing in common, neither anatomically nor clinically.

Among the authors whose opinion has been mentioned by

Finger, probably the most sharply defined one is that of Lang of Vienna (Lectures on Syphilis, Wiesbaden). He believes in an organic contagium of syphilis and thus describes its relations towards the pathological processes: "At first the general distribution of the contagium gives rise to the irritative processes, which appear in the shape of hyperemic, slightly inflammatory infiltrations and hyperplasias. In the majority of cases the normal state is restored, only exceptionally here and there infiltrations and hyperplasias fail to be absorbed, become organized into more or less permanent structures (nodes of the skin and mucous membranes, tophi).

The gumma requires for its development, that there remains in the tissue a residuum of the contagium of syphilis most probably in a considerably changed condition, which, irritated bo some accident into renewed propagation, favors the local production of tissue bearing the character peculiar to the gumma. Although it is probable that the disease germs are mostly those which, in the locality of the gummatous process, have for a long time rested in a state of quiescence, the possibility must be conceded, that such a remnant of the contagium, if carried to some other locality, may there, just as well, produce gummatous conditions."

Lang assumes, as you see, in the tertiary lesions of the disease the presence of an organic contagium, the contagium of syphilis in a modified condition. Now once conceded the presence of such an organic contagium of a micro-organism, is there any good reason, why this parasite should not be able to produce similar conditions if brought under favorable circumstances into the tissue of another individual? why tertiary lesions should not start from inoculation of tissue containing this parasite? It therefore appears, that from Lang's opinion it needs but one step further to arrive at my own postulate. It remains to show, however, that under such a theory the entire pathology of syphilis can be explained in a logical, plausible, and probable manner.

As I have stated before, syphilis in its early, virulent stages, ranks closely with the acute exanthemata, closest probably with variola, to which it has long been associated by the similarity of the popular names, pox and smallpox. Syphilis has in common with the exanthemata the period of incubation, the acute outbreak of an eruption of the skin under more or less intense general symptoms of fever, etc., the symmetrical, more or less general distribution of exanthema, the participation of the mucous

membranes of the throat and mouth, and as a rule, the immunity against infection with the same disease. It differs in so far as it is not limited to a single eruption, but may appear in repeated general or more localized relapses, phenomena which although rarely, are seen occasionally in the other diseases, particularly in scarlet fever. It apparently differs besides by the mode of the introduction of the virus by local inoculation. We know, however, so little about the ways and means through which the virus of the other acute exanthemata enters the organism, that perhaps in reality this difference may not be very great, or may not exist at all, for variola, at least the occurrence of direct inoculation of the contagium into the healthy skin or into small accidental wounds, is an established fact. A further difference seems to consist in the way syphilis is influenced in a specific manner by mercury. It has, therefore, been for some time my conviction that the efforts of those who were trying to find the pathogenetic parasite of syphilis, ought to be made in the direction of the acute exanthemata. The presence of some organic parasite as the etiological factor for these diseases seems almost a necessity, although so far no investigations have led to absolutely certain results. So far as I know, bacteriologists are looking for micro-organisms different from the bacilli of tuberculosis, leprosy and similar ones. It has given me great pleasure, lately to find, that a bacteriologist has, from his own standpoint, come to the same conclusion, which I have reached from the clinical side. In the *Centralblatt for Bakteriologie* (Dec. 31, '92. Vol. XII. 25) F. Doehle, First Assistant to the Chair of Pathology in the University of Kiel, has published the results of his investigations in regard to measles, scarlatina, smallpox and syphilis. He believes to have found protozoa of similar nature in all these diseases. Without accepting Doehle's discoveries as a final solution of the question, they seem at least to encourage the opinion, that in the active period of syphilis a contagium is present, which in its form and action are different from any one present in tertiary syphilis.

We do not know what finally becomes of the parasites in the acute exanthemata, whether they are eliminated from the organisms with and by the natural excretions and secretions, whether they are destroyed by their own toxines or whether they remain in an inert condition to be responsible for some of the sequels which are occasionally observed. I shall allude only to the close relations between measles and tuberculosis. For syphilis it seems probably that partly by some of the agencies enume-

rated above, partly by the effects of treatment, the parasite may be entirely eliminated or destroyed or may be deprived of its original character, either by undergoing a material change of the original microbes themselves, or by producing a new species in a different form. Whether any such metamorphosis has been actually observed in any organic parasite, or whether it is possible, according to the present state of bacteriological science, I am not able to decide; but it seems that the biology of the micro-organisms is not positively known to such an extent as to exclude the possibility or probability of such an occurrence. This newly formed or modified organism would then remain in the human body either as residua, as Lang seems to believe, in certain localities or in a more or less general distribution. Investigations of Loomis (*Researches of the Loomis Laboratory*, Vol. I, 1890) on the presence of tubercle bacilli in the bronchial lymphatic glands of adults, have shown that in 40 per cent. of the cases examined (6 out of 15), the bronchial ganglia, none of them even enlarged, contained tubercle bacilli, and that in 19 per cent. of the cases of adults, who died of acute non-tuberculous diseases, the same bacilli were present. Pizzini (*Zeitschrift, f. klin Medicin.* Vol. XXI., p. 329), who has made similar researches in the clinic of Prof. Torlanini, of Turin, comes to the same conclusion that tubercle bacilli are present in the lymphatic ganglia of individuals who died of acute diseases or by violence, in a proportion of not less than 42 per cent., and that some of the observations demonstrated in a convincing manner the possibility of the existence of tubercle bacilli in individuals of a strong, healthy constitution.

In the face of such facts, it will not seem to be absurd to assume a similar condition of a dormant existence for the parasites of syphilis. The appearance of tertiary symptoms would then take place whenever these organisms are called into activity by some accident, either by certain conditions of the individual which they occupy, or by some outside interference (trauma, chemical irritation, etc.). This would explain the well known influence of other diseases which reduce the vital power of the patient, of prolonged want of sleep and other deprivation of great mental excitement and exertion, of alcoholism, of malaria, etc., which are generally recognized as favoring and to a certain extent causing tertiary syphilis; it would not come into collision with the opinion of the numerous authors, who look to insufficient treatment of the early stages for the principal cause of tertiary symptoms. *Syphilitic cachexia* and *marasmus* accom-

panying tertiary syphilis might, in their turn, be considered as the consequence of products of tissue change due to the activity of the parasite of tertiary syphilis.

It remains to mention one phase of syphilis, the explanation of which forms, perhaps, the most difficult problem ; the precocious malignant syphilides and the early tertiary manifestations. Some authors, among them Finger and Neisser, deny the identity of these lesions with the real gummatous process and say that they may be the result of a mixed infection with the virus of syphilis and some septic poison. The frequent association with phagedenism of the primary lesion seems to speak in favor of this opinion. But admitting the tertiary character of these lesions, they may be caused by a particularly rapid transformation of the primary parasite into the secondary one under the influence of some unknown condition, so that both would become active at the same time and simultaneously exert their influence. The occasionally observed occurrence of secondary symptoms after tertiary manifestations, would not appear so unaccountable in the presence of two different micro-organisms, which may very well exist in the same organism at the same time.

Before I present a brief summary of what I have said, allow me, Mr. President and gentlemen, to ask your pardon for having taken up your time with abstract and hypothetical subjects. But I beg of you not to look upon this paper as the outcome of a cranky or morbid desire to bring forth something new and startling. What I have presented to you has forced itself upon my mind in the course of time and has been confirmed by later observations and by reading of current literature. The desire to submit such ideas to a scientific body able to judge, seems not unjustified and certainly excusable. I am far from expecting your ready approval of my opinions, but if one or the other point will appear worthy of your consideration and deliberation in the future, I shall feel amply satisfied. Allow me, then, to present in a few short theses the principal points of my opinion on syphilis :

1. Syphilis is caused by a micro-organism similar to those of the acute exanthemata ; the primary and secondary local manifestations are due to the direct influence of this parasite, the presence of which in these lesions is proved by their contagiousness.

2. The general symptoms accompanying these stages and immunity are the result of the action of the toxines (Finger).

3. The micro-organisms, under the influence of their own

chemical products or of treatment or in consequence of their natural innate character, are either eliminated or extinct or undergo some modification or produce a new kind or species of micro-organism.

4. This secondary parasite, which is similar to the bacillus of tuberculosis, can indefinitely remain in the organism in a dormant condition until called into activity by some accidental irritation.

5. It then produces the tertiary, gummatous manifestations, but not the diffuse chronic visceral affections like tabes, general paralysis, etc., which are the result of intoxication with the toxines of the primary parasite.

6. The secondary micro-organism is inoculable like the bacillus tuberculosis, and produces lesions identical with tertiary syphilis, but not primary syphilis.

7. Tertiary syphilitic manifestations may, therefore, be due to direct inoculation without the necessity of a primary or secondary stage.

42 East 22d Street.