after the first half of the present century had passed. Even as late as 1850 we find Vidal including under the name of syphilis catarrhal inflammation of the genital organs. As late at least as 1860, the professor of surgery in one of the chief universities of this country was teaching his students that gonorrhœa was liable to be followed by secondary symptoms, and should be treated with mercury!

The identity of gonorrhœa with syphilis was, however, denied even in the last century by Astruc,[1] Balfour,[2] and Benjamin Bell.[3] It was believed in by Hunter, but met with further opponents in Swediaur,[4] Hernandez,[5] and especially Ricord, who by the use of the speculum in venereal diseases, and his discovery of the *chancere larvé*, refuted the chief arguments which had been adduced in its favor, and established the non-identity of the two diseases beyond dispute forever. This was the first step taken towards the formation of "The Modern School of Venereal."

The idea that all venereal sores are due to a single virus, the virus of syphilis, had been the prevailing one for nearly three centuries prior to the year 1852. At the same time, it had not escaped the notice of many observers that the results of contagion were by no means identical; that, in some cases, the persons infected showed no symptoms after the healing of their ulcers, while others developed a train of symptoms lasting through years, and even transmissible to their children.

In the year 1852, Bassereau claimed a distinct cause or origin for each of these two classes of cases. He founded his claim, first, on the history of venereal sores, which we have already referred to, and which shows that although contagious ulcers of the genital organs, communicated in sexual intercourse, had been well known to the ancients, yet that the constitutional disease which we call syphilis made its appearance in Europe in the latter part of the fifteenth century.

Bassereau's second argument was based upon the "confrontation" of persons affected with venereal diseases, and he and others were able to prove, in several hundred cases, that when the disease was local in the giver it was also local in the recipient, and that when it was constitutional in the giver it was always constitutional in the recipient; in other words, that the broad line of distinction separating a local disease on the one hand from a constitutional disease on the other, was constant in successive generations without limit.

It will be observed that this proof does not involve any differences real or supposed in venereal ulcers themselves; it may be said to rise above such consideration in that it ascends to the source and origin of such sores; and we do not hesitate to say that much of the confu-

[1] De morbi venereis, Paris, 1740.
[2] Dissert. de gonorrhœa virulenta, Edinburgh, 1767.
[3] Treatise on gon. virulenta, and lues venerea, Edinburgh, 1793.
[4] Traité complet des maladies vénériennes, Paris, 1801.
[5] Essai analytique sur la non-identité des virus gonorrhéique et syphilitique, Toulon, 1812.

sion and contradiction of opinion upon this subject has been due to the fact that observers have confined themselves to investigating certain symptoms of venereal ulcerations, which, though generally constant, may yet be poorly marked or even wanting, and which often require practised eyes and fingers for their recognition.

We maintain that this clinical proof adduced by Bassereau has never been shaken, for, although local ulcers have been produced by the inoculation of matter from syphilitic sores, yet this is susceptible of, and indeed requires, as we shall see hereafter, another explanation than an identity of poisons, and, on the other hand, *there has never been a single authentic case in which syphilis has been produced by the inoculation of chancroidal matter from a person who has had only a chancroid and not syphilis.*

Bassereau does not appear to have speculated on the cause of the difference in venereal ulcers. We do not find in his work the words "unity or duality of syphilis," nor any expression of opinion as to the existence of a specific virus for the local sore. He simply says that he is obliged to recognize a different cause (*une cause différente*) for the local and constitutional diseases.

A school of dualists, however, soon sprang up, with Rollet, of Lyons, at its head, who departed from the simple faith of their founder in attaching undue importance to the characteristics of the sores themselves, and who claimed for the local sore a distinct, special virus of its own.

One of the tenets of this school was that the secretion of syphilitic lesions could not be inoculated with success either upon the person bearing them or upon any other person affected with syphilis, and this tenet in the theory of dualism was looked upon as vital.

It was not long, however, before it was successfully attacked and overthrown. Clerc, of Paris, Melchior Robert, of Marseilles, and others, succeeded in inoculating the secretion of syphilitic sores upon the bearers, with the result of producing ulcers, without incubation, bearing all the characteristics of the chancroid, and inoculable in successive generations. Mr. Henry Lee, of London, and Köbner and Pick, in Germany, also found that a true chancre would become auto-inoculable, if it was irritated by the application to its surface of powdered savine, or by having a seton passed through its base, so as to render its secretion decidedly purulent. Again, Boeck and Bidenkap, in Christiania, in their later attempts at syphilization, took matter exclusively from true chancres, and obtained the same result as when they had inoculated chancroidal pus. In five cases reported by Bidenkap and Gjör, of Christiania, matter was taken from ulcers obtained in the above manner, and inoculated by patients free from syphilis upon themselves, and in only one instance did any general symptoms ascribable to syphilis follow, and these were of a doubtful character.

These experiments *apparently* proved the identity of the syphilitic poison with that of the local sore. By their means, it was sup-

posed that the doctrine of duality was demolished, and the advocates of unity were triumphant. Whether this conclusion was not too hasty, we shall presently take occasion to inquire. But these experiments *actually did prove* the absence of any distinct *specific* virus in the chancroid, incapable of generation *de novo;* for here were chancroids artificially produced independently of any descent from chancroids.

To defend themselves, the dualistic school took refuge in the "mixed chancre," a sore combining both the syphilitic and chancroidal poisons, which, it was asserted, would satisfactorily explain all these cases and still leave the tenets of dualism, as at that time understood, intact. This explanation was for a while regarded as satisfactory, but it could no longer be upheld when such experiments had been multiplied indefinitely; when their number was so great that the chance of the commingling of two kinds of specific virus and their simultaneous inoculation was reduced to an absurdity; when an indurated syphilitic primary lesion could be taken at random, and, after due irritation, its secretion could be successfully inoculated with the effect of producing pustules and ulcers bearing every characteristic of the chancroid; and when the same result could even be obtained at will by the inoculation of the secretion from a purely secondary lesion, as, for instance, a syphilitic mucous patch! If the chancroid was dependent upon a distinct specific virus, its presence in all these cases was simply impossible, and yet not a single shade of difference could be pointed out between the result produced and that from the most emblematic chancroid ever met with in practice. Dualism was indeed henceforth dead, if by "dualism" be meant that each of the two kinds of venereal sore has a *distinct, specific* virus of its own. In the face of the experiments referred to, we cannot believe it possible to defend in future any such doctrine of duality.

But the last word had not been spoken in favor of a distinct origin of the chancroid from that of syphilis, nor the last experiment made and recorded which would decide this question. Let us examine more carefully the experiments just referred to. What was the matter so successfully inoculated? The pure, unmixed virus of syphilis? By no means. It was a compound product, taken, to be sure, from a syphilitic lesion, but a lesion irritated commonly to suppuration by artificial means; containing possibly the germ of syphilis, but containing also, and in fact chiefly composed of, *pus*. Which of these two factors was responsible for the effect produced? The syphilitic virus? In that case this virus should have preserved its power of infecting the constitution, and matter taken from these ulcers, and inoculated upon healthy individuals, should have invariably produced syphilis, which has been shown not to be true. Moreover, if it could be proved that pus alone, free from all suspicion of syphilitic mixture, was capable of producing the same result, then *pus* was the guilty factor, and there was no such transformation as

supposed by the unitists. Such proof we now have, as will be seen from the fol owing cases:

In 1865, Prof. Pick, at the suggestion of Prof. Zeissl, inoculated simple, non-venereal matter of inflammatory origin upon syphilitic subjects. Taking the secretion of pemphigus, acne, scabies, and lupus, he inoculated it upon persons affected with syphilis and produced pustules, not preceded by incubation, and the matter of which was further inoculable through several generations. Counter-inoculations upon the persons free from syphilis, who were the bearers of these affections, were without effect. The same result was attained by Kraus and Reder with the pus of scabies, and by Henry Lee with pus from a non-syphilitic child. The late Mr. Morgan, of Dublin, also succeeded in producing pustules and ulcers, identical in appearance with the chancroid and capable of re-inoculation through a number of generations, by inoculating syphilitic women with their vaginal secretions.

It would thus appear that the skin of syphilitic individuals possesses a marked vulnerability, a peculiar aptitude to become inflamed when acted upon by irritants; but this is nothing more than is seen in other and in non-syphilitic subjects, whose vital powers are impaired by any cause whatever. For instance, it is well known that among medical students engaged in the dissecting-room, it is those who are run down by hard study and overwork, who are most likely to become inoculated by fluids from the dead body. Again, the idea which was entertained by some that there must be a syphilitic soil for such inoculations to succeed upon, has since been disproved by other experiments.

The earliest of these experiments, so far as I am aware, have never been published, and were performed in the winter of 1867–8 by Dr. Edward Wigglesworth, Jr., of Boston, upon himself, while pursuing his studies at Vienna. He has kindly furnished me with the following history: After stating the grounds which led him to the conclusion—original, it appears, with himself—that "*pus pure and simple might be the cause of the chancroid*," Dr. W. says:

"I would state that I was free from all disease either hereditary or acquired; that I had never had a sore of any kind or any local or constitutional lesion of the skin or mucous membrane, and that I was merely a little run down from overwork in the hospital. I took from an acne pustule upon myself, pus, which I inoculated upon myself in three places on the anterior radial aspect of my left forearm at the junction of the middle and upper thirds, first pricking open the apertures of hair-follicles and then rubbing the pus into them. The result in the course of three or four days was three well-marked pustules. From each of these I inoculated one new spot upon the same arm nearer the wrist. The result was three new well-marked pustules. From each of the three second series I again inoculated fresh spots still nearer the wrist, and again the result was positive. The second series was hardly as well marked as the first,

and the third series was slightly inferior in vigor to the second; still all were well marked, the nine sores being at the same time present upon my arm. On removal of the crusts, perceptible ulceration of the skin was found to exist. Zeissl, with whom I was studying at the time (1867–8), happened to be lecturing upon dualism, and requested me to show my arm to the class to prove the production of ulceration from properly inoculated, simple, healthy pus. There were no buboes in my case, nor did the ulcerations require other treatment than exclusion from the air by means of a simple dressing, and cleanliness. The scars remain to the present day. I thus convinced myself and others—

"I. That the products of inflammatory action, if properly introduced into the human integument, may cause local ulcers, closely resembling chancroids and re-inoculable in generations.

"II. That this pus need not come from a syphilitic person or be inoculated upon a syphilitic person. If taken from, or inoculated upon, a person debilitated by any disease, as syphilis, the effect would doubtless be the same, though probably greater in intensity."

Many years subsequent to these experiments of Dr. Wigglesworth, Kaposi[1] published the following statement: "My own experiments have taught me that non-specific pus, such as that from acne and scabies pustules, when inoculated upon the bearers, as well as upon other non-syphilitic persons, will produce pustules whose pus proves to be continuously inoculable in generations; that from these pustules losses of substance occur, which heal with the formation of scar-tissue; and that as the number of pustules produced increases, the inoculability of the pus derived from them diminishes, and finally ceases altogether."

It is not necessary to dwell upon the exact correspondence of the result of such inoculations and that obtained by the inoculation of the so-called chancroidal virus.

The following case, occurring in the practice of Dr. R. W. Taylor, and vouched for by him in all its details, is an instance of a chancroid originating *de novo*.

"C. P. C., aged 26, became syphilitic in 1869, presenting primary and secondary lesions. In March, 1870, he had a papular syphilide on the body, and on the 10th of that month he came to me with gonorrhœa in its acute stage. On the 16th he came with an inflamed group of unruptured herpetic vesicles, in every respect typical. He feared these were chancres, but said he had not had connection since the first of the month. At this time the gonorrhœa was still active. On the 22d he returned, feeling certain that he had chancres. I then found four typical oval chancroids on the under portion of the prepuce, over which the gonorrhœal pus had flowed, since he had failed to follow my advice to keep the vesicles properly protected. His gonorrhœa was then on the decline. On the

[1] Die Syphilis der Haut, etc., p. 47.

26th he complained of pain in the right groin, and I found several enlarged painful glands. In spite of thorough cauterization at the previous consultation, the chancroids were still active. A few days later, while intoxicated, he had intercourse with his wife, and about March 31st he told me he feared that she had become infected. On the 5th of April, the wife came to me with five or six typical chancroids at the fourchette and on the inner aspect of the labia minora. At this time the husband's chancroids were in process of repair, but he had a typical chancroidal bubo. Owing to neglect on the part of the wife her ulcers became very extensive and were followed by abscess in the groin, neither of which healed for more than a month. Up to this time I have reason to believe that the wife led an irreproachable life. She certainly had never had syphilis. But, learning of her husband's infidelity, she became reckless, and two years afterwards contracted from another man a hard chancre on the left labium majus, for which, as well as for the subsequent secondary symptoms, she was treated by myself.

"To review the case briefly, a syphilitic man contracts a gonorrhœa and subsequently develops herpes vesicles, which in a few days are converted into typical chancroidal ulcers. I inoculated some of the discharge from the ulcers upon the patient's abdomen, and within a week a characteristic chancroid was developed. The experiment was, however, unnecessary, since additional proof was furnished by the formation of several chancroids on his left thigh, in consequence of his careless and uncleanly habits. Finally, intercourse with his wife resulted in her having chancroids and buboes."

The idea that the products of inflammation are the source from which the chancroid springs, and that the simultaneous inoculation of these products and of the germs of syphilis accounts for the varying degrees of ulceration and other phenomena met with in varieties of venereal sores, will strike many as novel, and it is easy to foresee the objections which will naturally arise. It will be asked: Can it be possible that the pus from acne, ecthyma, or scabies can give rise to a sore equal in duration and severity to that produced by matter from a typical chancroid? Comparative inoculations upon the same individual with these two agents may even be adduced to show that this is not the case. In replying to such objections, it must be frankly admitted that we do not as yet fully understand all the laws governing the inoculation of septic matter. We cannot, for instance, fully explain why one individual should be more susceptible than another, why different parts of the integument, as that of the chest, the arms, and the thighs, should develop ulcers so varying in their destructive tendency as is shown in the practice of syphilization; why the secretion from purulent urethritis and purulent conjunctivitis should be interchangeable, and yet have no effect upon the mucous membranes of the mouth, nose, or ear; why a chancroid of the prepuce should inoculate other points of that membrane, and yet commonly spare the glans penis; or why one upon the os uteri should allow the walls of

the vagina in contact with it to escape; and so with other instances that might be brought forward.

That the effect produced is to a great extent proportionate to the ulcerative action of the source from which the matter is taken, is evident to any one who has performed auto-inoculation from indurated chancres. If the chancre consist of a simple erosion with a watery secretion, seated upon an indurated base, the first two or three, or even more, attempts at auto-inoculation will probably fail; but as the surface of the sore becomes irritated to suppuration by repeated pricks of the lancet, these attempts will succeed, first in producing minute pustules and ulcers, but subsequently, as the suppuration increases, others larger and better developed. Taking these facts into consideration, it need not be wondered at if comparative inoculations upon the same individual with matter from a simple skin affection and from a chancroid of the genitals, should show greater severity in the latter. But without entering further into this subject, we claim it to be sufficient to have shown that the inoculation of the products of inflammation will produce an effect identical *in kind*, even if not in degree, with that of matter from the most typical chancroid.

The conclusions at which we have arrived may be summed up as follows:

I. *The chancroid is entirely distinct from syphilis.*

II. *The chancroid, however, does not depend upon a specific virus of its own, incapable of being generated de novo.*

III. *The chancroid, in most cases met with in practice, is derived from a chancroid, but it may arise, especially in persons debilitated by any cause, from inoculation of the products of inflammation, either simple or syphilitic, and subsequently perpetuate itself from one individual to another as a chancroid.*

IV. *The simultaneous inoculation of the syphilitic virus and of the products of inflammation gives rise to the "mixed chancre," and explains the different degrees of ulceration which the initial lesion of syphilis is liable to assume.*

We hold that this view of the nature of the chancroid is most consistent with our present knowledge of pathology, and that it affords the only complete and satisfactory explanation of certain cases met with in practice and of the phenomena observed in artificial inoculations. It has been adopted by Bäumler, who, in his recent able work on syphilis, after quoting experimental inoculations like those above given, says: "The necessary conclusion is, that the *poison of the soft chancre may, under certain circumstances, be produced de novo without the intervention of the syphilitic virus*, while the syphilitic poison propagates itself only in one continuous series. Hence the chancroidal poison, or whatever in these experiments produced the pustules resembling chancroids, cannot even be compared with the syphilitic poison, to say nothing of regarding them as identical."

In the recent well-known debate upon syphilis before the Pathological Society of London, that accomplished surgeon, Mr. Hutchinson, came within one short step of the truth when he admitted the origin of the local venereal sore to be "the products of syphilitic inflammation, but not usually containing the germs of syphilis." If he had omitted the adjective, "syphilitic," before the word "inflammation," his expression would have been consistent with the facts at present in our possession, and he would have found it inconsistent with such facts to proclaim dualism as dead, since dualism is nothing more than a duality of poisons in the evolution of venereal sores.

If the view here advocated be the correct one, it suggests an interesting analogy with the history of our belief as regards the nature of gonorrhœa, an affection which in the last century was regarded as due to the syphilitic virus. Ricord finally adduced convincing proof that it had nothing to do with syphilis. It was afterwards supposed to depend upon a virus of its own, the gonorrhœal virus. We now know that it may be caused by any simple irritant, but more especially by the pus from the urethral and other inflamed mucous membranes, whether originating or not in contagion. Such as the history of gonorrhœa has been, so, we predict, the history of the chancroid will be.

In the preceding remarks, we have only casually alluded to the evidence in favor of a duality of poisons to be found in the symptoms presented by venereal sores themselves, and by the lymphatic ganglia in anatomical relation with them. The value of this evidence must always depend upon the observer's knowledge, skill, and experience in venereal diseases. How often do we witness the grossest errors in the diagnosis of venereal ulcers made by men who are deservedly eminent in general practice! Moreover, instances not unfrequently occur in which the symptoms are ill-defined, and in which the most experienced will wait for further developments before expressing an opinion. Hence, so long as the symptoms of the sores themselves were alone considered, the question of unity or duality remained undecided. And yet the evidence founded on these symptoms is not to be despised, for in the great majority of cases they are sufficient to enable us to distinguish the syphilitic from the local sore, and the obscurity of some cases is readily explicable on the ground of the simultaneous inoculation of the products of inflammation and the germs of syphilis, and the well-known immediate action of the one and the incubation of the other.

Division of the Present Work.

Following the natural order suggested by the above considerations, we propose to divide the present work into three parts: the First treating of Gonorrhœa and its Complications; the Second of the Local Contagious Ulcer of the Genitals, or Chancroid, and its Complications; and the Third of Syphilis.