months previous to her seeing Mr. Cardew the tumour had increased rapidly in size, and had frequently burst, severe hæmorrhage in each case ensuing. The patient was a strong-looking girl of short stature, who, with the exception of occasional headaches, had enjoyed excellent general health. On examination, a considerable tumour was visible, evidently a cirroid aneurysm, otherwise styled aneurysm by anastomosis, extending from the back of the right ear to the occipital protuberance, and extending as high and descending as low as the upper and lower borders of the temporal bone, occupying, in fact, about twenty square inches. The tumour was of a pulpy consistence, and pulsated forcibly, as also did the ear. A loud thrill was audible over it. It was covered with small and thin-walled venous projections, which were the sites of the frequent hæmorrhages. After a specially severe and dangerous hæmorrhage about the middle of December, 1881—she was stated then to have lost about three pints,—her friends and herself became seriously alarmed, and requested the institution of some radical treatment. Accordingly she was shortly afterwards admitted into the Cheltenham Hospital, and came under the care of Dr. Ferguson. There, after due consultation, it was decided that the common carotid artery should be tied, and this was accordingly done in the ordinary manner and with the full Listerian precautions that have been employed by all the surgeons of the Cheltenham Hospital since the year 1876. The operation presented no difficulty, and calls for no remark save that, the omo-hyoid muscle passing apparently somewhat higher than is usually the case across the neck, it was easier to secure the artery below than above the muscle; in which former position it was accordingly reached and tied. The ligature was of chromic catgut of medium thickness, most obligingly sent to Dr. Ferguson by Sir Joseph Lister. And in order that his kindness should not be unnecessarily trespassed on hereafter, we would desire in this place to repeat Sir Joseph's information, that chromicised catgut of identical quality can be supplied by David Marr of Holborn. The patient's progress after the operation was typically satisfactory, there having been neither pain nor any (even the most trifling) elevation of temperature. In fact, the dressings were finally removed on the eleventh day after the operation, exposing then the firm cicatrix of a wound that had evidently healed by first intention. The immediate result of the operation was the shrinkage, almost to disappearance, of the tumour and the complete cessation of the pulsation. It was, therefore, no small disappointment to notice after the removal of the dressings that a slight pulsation was again perceptible over the site of the tumour. However, she was shortly afterwards dismissed from the hospital in good health and spirits and well pleased at the result of the operation. During the next six months her history presented no points of special interest, save that the tumour became still less noticeable, and that the pulsation remained obscure. But after this six months' period of quietude a collateral circulation succeeded in establishing itself to a somewhat considerable extent, and the tumour began again to increase and pulsate somewhat after its former fashion (though much less forcibly), and there was even some recurrence of hæmorrhage. This being the case, Mr. Cardew (to whose care she had returned) determined to ligature the tumour subcutaneously. One half of the tumour was accordingly ligatured with a silk thread in the usual manner, the latter being tightly tied. The result was the entire stoppage of the pulsation in the part tied. The silk was tightened every day for ten days, after which time, when it had almost cut its way out, it was removed. This process of ligation brought about a notable consolidation of one-half of the tumour, and this at the expense of but little pain or suppuration. Some few days afterwards the posterior auricular artery was ligatured on a pin, which had been first passed under it, this step being taken in consequence of its large size and evident connexion with much of the remaining pulsation. Two months later the other half of the tumour was similarly ligatured subcutaneously, and again, six weeks later, as an additional safeguard, the whole was once more subcutaneously re-ligatured. With this last ligation the treatment ended, almost complete obliteration of the tumour having been effected, with an entire removal of the hæmorrhagic tendency; and on inspection of the patient on March 7th, 1884, and eighteen months after the cessation of treatment, it was evident that a substantial cure had been effected. Some slight softness only was apparent at the position of the former growth, but there

was no feeling of pulsation anywhere, save over an artery in the position of the occipital, and the ear, which was formerly so tumid, had returned to a moderate size. The hæmorrhagic tendency had not again manifested itself, and the patient's health and spirits were of the best.

Remarks.—The chief interest of this case lies in its close resemblance to the one treated by Mr. Storks and Sir William Fergusson, and narrated in the latter's *System of Practical Surgery* (p. 151), where much information respecting such cases will be found. Sir William Fergusson, however, trusted more to obliteration of the vessels in the growth by pins and ligatures, and Mr. Cardew to ligation *en masse*. In respect to all such cases it may be doubted if the treatment by pins or direct ligation could be safely applied without the preliminary tying of the chief nutrient artery, in reference to which question the following remarks of Sir William Fergusson are much to the point. "The practice above described was certainly attended with considerable hazard, both on account of the inflammation as well as the hæmorrhage, and it was not without misgivings that I adopted it. But the case seemed otherwise hopeless, and the previous obliteration of the common carotid led me to trust that such bleeding as might occur could be controlled. Without this preceding step it may be doubted if the result would have been equally successful; and I am therefore disposed to attribute the satisfactory issue to a combination of the two methods—viz., first, the obliteration of the main arterial current towards the disease, and then the destruction of the vessels in its substance." It is interesting, finally, to note the success of both these cases in the face of Billroth's direct condemnation of the treatment pursued (*Surgical Pathology*, vol. ii., p. 337), as interesting as it is to remember that the treatment which was written about so warningly by John Bell is that very one of extirpation most highly commended by Billroth.

Cheltenham.

THE BACILLUS OF SYPHILIS.¹

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TRANSLATED BY DR. J. N. BLOOM, B.A., M.D.

SINCE Hallier's time, a period of almost twenty-five years, the virus of syphilis has been the subject of frequent communication and of almost constant discussion; but, nevertheless, the conviction is universal that none of these researches have even partially solved the question, because of their countless contradictions, inefficient methods, and errors that are easily recognised. And further, as my effort is not the continuation of any preceding one, I will not tax your time and patience by a review of the literature of the subject, but will at once detail my own observations, referring for the literature and development of the subject to a publication of mine shortly to appear.²

My researches with syphilitic products have led to the discovery of micro-organisms which until now were unknown, which are constant in their appearance, and which are thoroughly characteristic. They approach nearest in their morphological appearance and staining reaction to the bacilli of leprosy and tuberculosis, and, like these, are to be found in granulomata. By means of the method about to be given they appear as straight or curved, and sometimes irregularly bent rods, which are on an average from three and a half to four and a half micro-millimetres long, and from one-fourth to three-tenths thick. With a low power they appear uniformly smooth, presenting here and there a bulbous swelling at their extremities. With a homogeneous immersion lens (one-twentieth of an inch, Reichert) their surface appears irregularly undulatory, and slightly notched, yet in a manner such as to leave no doubt as to their rod nature. Within them we recognise, at equal distances from one another, oval, colourless, bright spores, from two to four in every bacillus. I never saw the bacilli lying free, but always enclosed in cells. These cells are from a trifle larger than, to double the size of, white blood-

¹ A paper read before the Royal and Imperial Society of Physicians of Vienna, on March 27th, 1885.

² Die Syphilis Bacillen, Wiener Medizinische Jahrbücher, first quarter, 1885; also as a brochure about to be printed by Braumüller, Wien.

corpuscles. They are round, oval, or irregularly polygonal, and sometimes show a central or eccentric oval nucleus in the shape of a light spot. The bacilli are to be found in them singly or in groups of from two to nine or more, sometimes intertwined, or, again, in irregular confusion. The cells containing bacilli occur sparingly in the midst of the infiltration, more often on the borders of the same in the apparently normal tissue immediately adjacent. I have observed them in papules embedded between the prickle cells of the rete Malpighii, and also in the initial lesion in the lumen of a large lymphatic duct. It seems to me to be beyond doubt that they possess the power of active locomotion—migratory cells. To obtain these results I had to employ a new method. Starting with the idea that bleaching measures would be serviceable in microscopic work, as well as in the arts and trade, I succeeded, after numerous fruitless attempts, in finding what I sought in permanganate of potash and sulphurous acid. In brief the method is as follows. Sections, which have been hardened in alcohol, are coloured in a solution of gentian violet (Ehrlich-Weigert),³ from twelve to twenty-four hours at the ordinary temperature, and then for two hours at a temperature of 104° F. The section, in order to be decolourised, is first washed in absolute alcohol for several minutes, and is then, by means of a glass or platinum needle, conveyed into a watch-glass containing about three cubic centimetres of a 1½ per cent. aqueous solution of permanganate of potash. In this it remains about ten seconds. As a result, a brown flocculent precipitate of the hyperoxide of manganese is formed in the fluid, and also covers the section. It is then placed in an aqueous solution of chemically pure sulphurous acid, in which it is deprived of the hyperoxide of manganese, either instantaneously or in a very short time, dependent upon the concentration of the acid; it now appears entirely rid of its colouring matter in some places, while in others it is still deeply coloured. It is next washed in distilled water, and is again placed in the solution of the permanganate of potash, in which, as in the succeeding repetitions, it remains three or four seconds, and from which it is again conveyed to the sulphurous acid. When it appears colourless, which as a rule occurs after this procedure has been gone through three or four times, it is dehydrated in alcohol, rendered transparent in clove oil, and mounted in Canada balsam. Xylol Canada balsam is best. This method of decolourisation, to which, besides those already mentioned, the bacilli of leprosy and tuberculosis do not yield, not only permits the micro-organisms of syphilis already described to be brought to view, but is a characteristic staining reaction of them. The bacilli of syphilis, leprosy, and tuberculosis are not decolourised by my method. All other bacteria are. The bacilli of syphilis, however, are differentiated from those of leprosy and tuberculosis in that the latter are not decolourised by nitric and hydrochloric acids, whereas the bacilli of syphilis are. My method failed in the examination of splenic fever, typhoid, equinia, endocarditis ulcerosa, croupous pneumonia, various secretions of wounds, the contents of acne and scabies pustules, and also in the examination of normal tissue. I wish also to mention that my attempts to prove the presence of these micro-organisms in two chancreoids were futile.

By means of the method just given I have examined sixteen cases of syphilis, which I will simply enumerate without going into particulars. Sections of two initial lesions; a lymphatic gland; three papules and four products of the tertiary stage; and further, the secretions of three initial lesions, and of the same number of moist papules. The result was a positive one in every case. The number of bacilli found varied. In general they were not very numerous. As regards the number, the age of the infiltration, and perhaps also the length of time since infection, are of importance. Thus I found in every section of two initial lesions, and of a periosteal gumma in a new-born child, one or more groups of bacilli, and here and there quite large groups among them; whereas in other cases a series of sections had to be examined before the undoubted presence of bacilli could be confirmed. According to my experience, the proof of the presence of the bacillus in syphilitic products is of equal diagnostic importance to that of the tubercle bacillus in the sputum.

Inasmuch as I have found, as a constant factor in undoubted syphilitic products of various kinds, a special kind of bacillus which differentiates itself in form and staining

reaction from all those known up to the present time, and which therefore is a specific bacillus, and as we believe ourselves justified as regards other infectious diseases in assuming the constant occurrence of peculiar micro-organisms to be the cause of the disease, I maintain, as regards syphilis, that it is very probable that the bacilli which I have discovered are the carriers of the syphilitic virus. In addition to this specially important result the above-mentioned researches present several other theoretically and practically important facts and deductions, which I will briefly mention. The occurrence of bacilli enclosed in lymphoid cells whose power of locomotion, according to my before-mentioned observation, is beyond dispute; further, the occurrence of bacilli in the apparently healthy tissue lying nearest the infiltration; and, finally, and most especially, their discovery in the initial lesion in a closed lymph-duct—support the theory that the poison of syphilis is conveyed from the place of infection, first by the lymphatic system, and later through it into the blood-vessels. The occurrence of bacilli in the rete Malpighii is of great theoretical interest, and accords with the clinical observation that in certain cases syphilitic infiltrations need only lose their covering of horny epidermis (moist papules) to be contagious.

As I have shown bacilli of the same nature as in primary and secondary products to exist in typical gummata, we must look upon the latter, as indeed do the greater number of syphilologists, as specific syphilitic affections. Only a few writers have evaded the difficulty, inasmuch as they consider gummata to be the result of a specific cachexia, and not of a syphilitic virus, basing their claim upon a number of negative inoculations, and pointing out that syphilitic patients in the tertiary stage, as a rule, produce healthy—i.e., non-syphilitic—children. Recall to mind how long Ricord and his followers maintained the non-infectiousness of the products of the secondary stage, where the circumstances were so much simpler, because of the much greater frequency, the situation, and the nature of the manifestations. Further, I cannot understand why because one has some local syphilitic deposit he should not have healthy generative cells, and as a result should not produce healthy children. In heredity we must not forget that there are affections of the generative glands which have, perhaps, no subjective or clinical symptoms, and yet are followed by the production of diseased generative cells, or, at least, of spermatic fluid containing the virus. I know from a personal communication of Armauer Hansen, and I have been in a position to convince myself of it, that the testes of leprosy sufferers contain numerous bacilli in and between the seminal ducts, whether symptoms of disease of the testicles exist during life or not. In the future the question as to whether a given case is syphilis can only be affirmatively answered if the presence of the specific bacillus can be demonstrated.

In conclusion, I venture to hope that by continuous research, particularly in the cultivation and inoculation of the bacillus which I have discovered, etiological relation between it and syphilis will be so decidedly proved that none will deny it, and that a means will thereby be attained for successfully combating one of the saddest diseases of the human race. The experiences of the last few years in the successful attenuation of the virus of splenic fever and other infectious diseases warrant the hope that this expectation is not over-sanguine.

CLINICAL MEMORANDA OF TWO CASES OF CHRONIC VAGINITIS.

WITH REMARKS.

By J. BRAXTON HICKS, M.D. LOND., F.R.S., &c.

CASE 1. *Vagina throughout covered with granulations; freely bleeding; complete recovery.*—A widow, of about sixty years, applied to me in consequence of a constant bloody discharge from the vagina. To the finger it felt velvety and granular, from os to vulva, bleeding on examination. The passage of the speculum caused much distress, and also bleeding; and it revealed the fact that from one end to the other the vagina looked as if covered by granulations as of a healing wound. The bleeding being severe, it was necessary to swab the whole surface over with tincture of perchlo-

³ One hundred parts of a concentrated aqueous solution of aniline with eleven parts of a concentrated alcoholic solution of gentian violet.