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DISCUSSION

The President said the Society was very much obliged for both these papers. Dr. Stannus had supplied the meeting with many suggestive questions, particularly about the relation between syphilis and yaws, a subject in which, many years ago, Sir Jonathan Hutchinson was very much interested. He did not gather whether or not yaws attacked a viscus which was particularly liable to be involved in syphilis, the liver, though Dr. Stannus mentioned that the organism of yaws had been recovered from the spleen. In connection with the predominance of the cutaneous lesions and the escape of the central nervous system in yaws, the freedom of the skin from syphilitic lesions in tabes was interesting.

The Society was fortunate in having present Dr. Chesterman, who had had a large experience of yaws in the Belgian Congo, and it was hoped he would kindly say something about that.

Dr. Chesterman said little remained to be said after the two opening papers, though one or two points had struck him as being worthy of mention. He was responsible for a territory in the Belgian Congo of 80,000 square miles, and every year it fell to the staff to treat 3,000 cases—primary, secondary and tertiary. The natives there stated that yaws had been with them from time immemorial, and that 95 per cent. of the people got it in infancy, or at least before puberty. Only rarely did adult cases come for treatment. It was recognised there that syphilis was a different disease, having been introduced into the territory by the Arabs, who reached Central Africa about 1850. Syphilis was given a different name by the natives, and it ran a course different from that of yaws. There were not such florid lesions in syphilis, and secondaries occurred in the axillae and nates.

With regard to visceral lesions, he had not seen these in yaws, neither did he get cases of nervous disease in associa-
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tion with it. He would think the case mentioned by Dr. Stannus of stridor and laryngeal obstruction was due to a catarrhal laryngitis, as broncho-pneumonia was common in children having the secondaries of yaws.

There were some points of interest in connection with the question of immunity. In the days when war and bloodshed were the order in Central Africa old women acted as ghouls, and went to the scenes of bloodshed and collected clotted blood and mixed it with palm oil, then applied this mixture to the lesions. It was said to be beneficial in healing them. The women had a great objection to bringing their children for treatment until the secondary granulomata were well developed; it was on a par with the superstition in this country about "driving the disease inwards."

He had seen all the varieties of lesion which Dr. Manson-Bahr had depicted on the screen. One interesting point he would make was that one never saw tertiary lesions in a patient who had had a persistent secondary lesion, i.e., crab yaws of the feet and granuloma remaining in the axilla or in the bend of the elbow, or other situations. Often these existed twenty or thirty years or longer after the primary lesion. He had never found a case suffering from bony disease or deformity or ulcers of the skin who had had one of these persistent secondary granulomata.

He had given up bismuth treatment for yaws, because of the instances of stomatitis which occasionally were met with, in severe degree, after that treatment. For children he was now using stovarsol, and in much larger doses than usually advocated, i.e., ten times as much as the average dose of N.A.B. He gave 1 1/2 gm. to start with, working up to 3 or 4 gm., according to age. After such treatment he had not yet seen any untoward symptoms. For adults he was trying hallarsol, which was an aminophenol-dichlor-arsene, curative doses of which contained about one-twentieth the amount of arsenic in salvarsan. Two hundred cases had been treated in that way, and the results were excellent. In that way it was his hope to prevent the accidents which sometimes arose from arsenical medication.

He fully subscribed to the idea that the whole subject required reinvestigation, and, though the British territories were most favoured, there was no place where yaws abounded more than in the Belgian Congo.
Dr. H. M. Hanschell said that what he had to offer after the sparkling wine already given was only very small beer. He related two cases: (i) a male West Indian, of mixed Negro-white descent, aged twenty-five years, very intelligent, though a graduate of an ancient university and belonging to a profession whose members call it learned. When sixteen years of age, he had had, he said, a sore on the left cheek, flat, and not painful. Afterwards it became covered with a yellowish scab. It was present for many weeks, not healing in spite of ointments. Later moist red sores broke out all over his body, and when this condition had lasted for some weeks he was taken to see the doctor who had the care of yaws patients in the island. That doctor diagnosed the lesion on the cheek as the mother yaw, and the rash as secondary yaws, and gave him two injections of neo-salvarsan. All sores then rapidly healed. Nine years later, when examined by the speaker, no clinical signs of either yaws or syphilis could be detected. No scars on genitalia or cheek. The blood was Wassermann positive + (method No. I. M.R.C.). Another laboratory (using Method No. 4, M.R.C.) also returned the blood as positive +. After a provocative injection of salvarsan, the blood was found to be as before—positive +. Latent yaws was diagnosed, and the man was advised to have a course of injections of salvarsan and bismuth. This had to be postponed. Ten weeks later he returned to the speaker, and now presented a hard chancre on the glans penis, which had been there ten days, and had been first noticed three weeks after coitus in a Belgian town. Sp. pallidum was easily found in the chancre serum. He was given three stabilarasan and bismuth injections, and the small chancre healed, but blood was still positive +. The patient then left for home. If this medical history is reliable, it must be concluded that nine years previously the patient had had complete and thorough infection with yaws. And if his Wassermann-positive blood serum had any significance, it was that probably he still had yaws. Yaws then had not prevented him acquiring a primary syphilitic chancre. This is of interest, because he thought Dr. Manson-Bahr and Dr. Stannus would agree that recently there had been a revival of the theory that yaws protected from syphilis. One enthusiast had prophesied that the tropics would yet see the rise of another Jenner who, by vaccinating with yaws, would prevent syphilis!
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Of course mere facts would not prevent that sort of thing being tried. Meanwhile an American worker had successfully inoculated yaws into cases of G.P.I.

Case 2 concerned juxta-articular nodes. A West African negro ship’s fireman attended the Seamen’s Hospital, Royal Albert Docks, for chancre on the penis. *Sp. pallidum* was demonstrated from the chancre, and the blood was found to be W. positive ++. During treatment this patient asked the speaker to examine his knee. Below the right knee was a typical juxta-articular node. If that were a sign of yaws, then here again yaws had not protected from syphilis.

Dr. Manson-Bahr mentioned the case of goundou in a chimpanzee in the Zoo. Apes and monkeys might yet be found to have a “natural” spironeme disease.

Dr. Stannus and Dr. Manson-Bahr would remember the *Cynocephalus* monkey with goundou at the Seamen’s Hospital in the Albert Dock. That animal slowly grew a characteristic goundou. He became savage and had to be killed. The speaker had macerated the tissues off the skull and thus uncovered a hard bony tumour obviously starting from the socket of the canine tooth.

Goundou did not occur apparently in the West Indies; it seemed to be confined to West Africa and the Congo. He had seen the disease three times in the Gold Coast in 1913–14, and it was said then to be rare there. Yaws, however, as Dr. Stannus had pointed out, was world-wide within Cancer and Capricorn.

In the Island of Barbados yaws at one time was common, then it disappeared, and had remained away for generations now, though there was still plenty of syphilis there. The negroes there were perhaps the first to take to the wearing of clothes, and that might have protected the skin from contact infection.

The speaker had seen central nervous system infection with syphilis in pure Africans, and he had seen white men with such lesions who had acquired their syphilis originally from negro women in Africa.

Dr. Chesterman could confirm that sleeping sickness workers in Africa, examining the spinal fluid of a number of natives, had recorded central nervous system syphilis in negroes who had never left that particular district. The speaker believed there was no real foundation for the fancy that there was a peculiarly mild African negro-
syphilis which did not affect the central nervous system: nor because syphilis and genital lesions were very rare in many regions where yaws was common in the indigenous population, therefore yaws protected against syphilis. It meant only that syphilis had not yet been introduced there.

Dr. Wilfrid Fox said his knowledge of yaws was practically nil, but he felt that the Society was very much indebted to the speakers for what they had said. He was old enough to remember the teaching of Jonathan Hutchinson; he also remembered a counter-attack coming from the other side. His own experience of yaws was more or less limited to the histology. He was working under Dr. Macleod, of Charing Cross Hospital, who had some yaws material sent from the tropics, and at the same time he was also cutting sections of syphilitic lesions and comparing the two. The conclusion he arrived at was that the histology was a complete answer to Hutchinson, as yaws was the purest plasmona one could get. The endarteritis was not so marked, and there was not the large-celled hyperplasia which was to be seen in syphilitic and tubercular granulomata. He had seen a case of yaws in Southern Florida, but at that date he had only just qualified.

The two openers had thrown out the suggestion that, like Hansen's leprosy bacillus, and the tubercle bacillus, the treponemata under discussion might have been derived from a common stock, or might have developed one from the other, under different climatic conditions. But one had also to consider the immunity or want of immunity of the two diseases, and the result of treatment alone would make one suspicious; syphilis was not, however, cleared up with two or three injections of salvarsan like yaws.

With regard to the juxta-articular nodule shown on the knee joint, he had had, in St. George's Hospital, some years ago, a woman patient with a gummatous infiltration of both pre-patella bursæ, which looked exactly like the picture which Dr. Manson-Bahr showed. She was a charwoman, and did a good deal of kneeling. She had never been out of this country, and she was definitely syphilitic, not yaws.

Speakers also questioned whether we ever saw true frambesoid syphilide. These lesions were seen, and were
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common on the face, especially in the cleft of the chin, just below the lip. He had had two cases in this situation and one of a frambesoid lesion on the side of the knee. The late Dr. Pringle showed at the Royal Society of Medicine a case of universal frambesoid rash all over the body, and a few cases of this kind had been exhibited by others. He thought, therefore, that syphilis did ape yaws, as it did many other skin diseases.

The President asked, in connection with what Dr. W. S. Fox said as to the slight character of the histological lesions in the blood vessels in yaws, if there was any evidence that the parasite of yaws settled down, as did the organism of syphilis, early and markedly in the coats of the arteries. Another question of some interest was a possible relationship between yaws and malignant disease; in the past it had often been said that native races free from syphilis did not suffer from malignant disease, though this idea had now been exploded. There was some evidence that the chronic inflammatory and degenerative action which the syphilitic poison exerted on the tissues favoured the incidence of malignant disease, a question which the Society would discuss at a later meeting. Dr. Stannus and Dr. Chesterman mentioned cases in which a sinus due to yaws had existed for as long as thirty years, and it would be interesting to hear if such a specific irritant would produce malignant disease of the skin more effectively than a non-specific one. Osteitis deformans was thought to be a late manifestation of syphilis, thus corresponding to the same sequel in yaws.

Dr. Chesterman asked whether members could give any confirmation of an article he saw in the Brussels Médicale by Dr. Barnard, stating that the onset of nervous symptoms was more common in people who had been treated before a marked secondary rash appeared. There were many cases in which two or three received their infection from the same source, and those who were treated early came later with tabes, while this was escaped by those who received no treatment until after the appearance of the secondary rash.

Dr. Wilfrid Fox, replying to the last remarks, said the point had been discussed, and the feeling was against it. Good results followed treatment of florid secondaries as well as early primaries.
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Colonel HARRISON. I have no personal knowledge of yaws, so can speak only as an onlooker. I should like to endorse the plea made by the openers of this discussion for a research into the relationship of yaws to syphilis. It seems to me that nothing has been said which disproves the hypothesis that differences between yaws and syphilis lie in the soil rather than the seed. I think that any research on this subject should be carried out on a common soil, that is, animals kept under identical conditions of housing, light, etc. It does not seem likely that the question will be decided by results of experiments to determine resistance to infection with the organism of yaws after previous inoculation with the organism of syphilis, or vice versa, because it has been shown by Brown and Pearce, Chesney, Kolle and others that rabbits which have been inoculated with one strain of *Sp. pallida* and have become resistant to that strain can be inoculated successfully with a heterologous strain of the same organism. For example, a rabbit inoculated with the Nicholl's strain of *Sp. pallida* and not treated until ninety days after the outbreak of the primary lesion cannot usually be reinfected with Nicholl's strain for, at any rate, a number of months after the disease has been eradicated by treatment. If, however, another strain, such as the Truffi, is employed for the reinoculation, in a number of cases a second infection results. In view of this, it would not be right to claim from successful inoculation with *Sp. pertenue* of an animal which had previously been infected with *Sp. pallida* that yaws and syphilis are different diseases; one would rather argue a group of diseases caused by members of a family having the morphological characteristics of *Sp. pallida* and *Sp. pertenue*. I should think that a more hopeful line of research would be on the histological differences in the tissue reactions of the same animals to *Sp. pallida* and to *Sp. pertenue*.

Dr. MANSON-BAHR, in reply. Of course, the Fijians and other Polynesians had neglected few opportunities of contracting syphilis; one had only to read the account of the discovery of the islands and what happened at the visits of whaling and other vessels to know what was happening at the present day. Many Fijians and Samoans were married to Europeans. They certainly had every opportunity of contracting syphilis from Europeans.
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Per contra, there was no known case of a European having contracted syphilis from Fijians. There were many cases of syphilis among the Europeans and Indians in Fiji Islands.

Dr. Stannus had said he had seldom seen real yaws in a European. But one did not see these cases in the big towns. Once the speaker attended at his death-bed an old German who had lived among the natives forty years and "had never put on a boiled shirt." He had the marks of the lesions of secondary yaws, and he told the speaker he had suffered from crab yaws on his feet. Natives stated that both Chinese and Europeans contracted yaws from them.

Concerning the distribution of yaws in the matter of altitude, in Ceylon yaws did not occur up-country, but it was very common in the low country, where the matter of clothing might play a part. The Fijian knew that yaws was contracted from his mat, and these mats were handed down from father to son, and formed a continual source of infection.

Much was to be learned from a study of the relation of yaws to syphilis, and such a study might shed light on many other problems, such as different forms of trypanosome disease caused by trypanosomes morphologically identical with one another.

He would like to know whether goundou in apes was the same as goundou in man; in the higher monkeys he thought it might be a sign of senility.

The President spoke of endarteritis. Endarteritis of the viscera was said to be absent in yaws, but this again might be the subject of better pathological investigations. The material in this country for investigation of this subject was very scanty.

The President had also asked whether yaws predisposed to malignant disease. In Dr. Buxton's photographs there was seen to be a sarcoma growing on the site of an old ulcer of yaws, just as it might in a syphilitic one.

Dr. Stannus, in reply, said that few visceral lesions had been ascribed to yaws. Clinically those which had been described were in Fijians, and had been called paraframbesial lesions. If G.P.I., tabes, aortitis, optic atrophy, were found among Fijians and Samoans, it was very significant. Judging by what we knew of yaws and
syphilis elsewhere, it seemed most probable that such lesions were due not to yaws but to syphilis, a disease common among the Polynesian peoples, and Dr. Manson-Bahr said they had every chance of being infected with syphilis.

The histo-pathological findings in yaws which the President referred to was another big question. The only work he knew of was that referred to by Dr. Wilfrid Fox, and there was room for an extension of the investigation on a large number of cases. Malignant disease could be found among the natives if it were looked for. In Africa one of the commonest sites for malignant disease seemed to be the liver, possibly associated with bilharziasis. He had never seen carcinoma of the breast there, nor epithelioma of the lip or tongue. He had seen mixed tumours of the parotid and other conditions.

Differentiation between yaws and syphilis was helped by paying careful attention to the history the native told one, he was often a very excellent observer. The symptoms of laryngeal obstruction in yaws cleared up in forty-eight hours after the first injection of bismuth, but he doubted if bronchitis would be cleared in the same way by such a treatment.

It was well known that some extensive ulcerative lesions of yaws when healed left unpigmented scars. Another lesion associated with loss of pigment, one first described by Ziemann, consisted of a patchy depigmentation about hands, wrists, and feet and ankles. Its etiology was then unknown and he called it "Melung"; it was now considered to be due to yaws.

The French writers believed that there existed among Africans a variety of syphilis which did not produce G.P.I. and other nervous system sequelæ. The syphilis most Africans acquired as seen by us was the imported disease, and cases of G.P.I. were now turning up from all our African colonies; he was able to say that tabes was extraordinarily rare among African natives.

He thought the juxta-articular nodes which had been described must be of syphilitic origin; the only question of interest was as to whether they differed in any characteristic from those due to yaws. If a sufficient number of each kind of case could be seen, perhaps points of reliable difference could be formulated. Cases of congenital yaws had been described but could not
be accepted; the same was true of goundou. One of the original cases to be described was said to have been present at birth, but on careful re-reading of the article in which the case was described this seemed more than doubtful.