

YAWS AND SYPHILIS

IN

CONTRAST COMPARISON AND COMBINATION

Based on Short Course Mass Treatment in East Africa

with

2300 Case Records

24 Photographs

And 50 References to the Literature.

A THESIS

For the Degree of Doctor of Medicine

Presented to the University of Edinburgh.

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## INTRODUCTORY.

"A somewhat paradoxical title" might well be the remark from the theoretical point of view. "Why! the diseases are so contrasted as to admit of no comparison and their combination even is denied by some."

Granted! when you have, on the one hand, a truthful intelligent European, with the presence or history of a Hunterian Chancre, - Glands, - Secondary rashes, or tertiary manifestations, and on the other, a native of the Tropics with an Extragenital mother Yaw, and the pathognomonic or, (to employ an expressive Scottish word) 'Kenspeckle' Eruption of Secondary Yaws. "Ça saute aux Yeux".

With these classical features of the two diseases I am not concerned, since they admit of no discussion when so portrayed, but, let us plunge into Central Africa among a people recently more primitive than those of Old Testament narrative, and we can readily understand if opinion is still divided as to the identity of the widely differing diseases mentioned in the Bible, what chance the African native had in the past of differentiating Yaws and Syphilis for himself. Further, - what chance has the skilled observer even now of obtaining a satisfactory history of one or other or perhaps of both diseases.

When/



When he comes to examine the lesions he may be even more at sea. He is at once 'up against' the black skin; he finds the lesions perhaps obscured by dirt or native medicines, and, if not superimposed on tissues already attacked by other diseases, e.g. Filarasis, Leprosy or Tubercle, he may find them so profoundly altered by deficiency disease, tropical anaemias, secondary infection, or all three that he cannot even say with any certainty that they are Spirochaetal in origin, let alone, differentiate the particular species concerned. Little wonder then, that many have considered them one and the same.

Such an observer is of necessity denied the crucial tests of microscopical, histological and serological diagnosis, and he must therefore fall back on other and more unorthodox means; he must familiarise himself with the combinations and one might even say the permutations of his two diseases with each other and with the other local conditions already mentioned, and he must know something of the history of the diseases he is treating and the people he is working among.

It is then along these lines and with these reservations that I wish to discuss the subject. Fortunate it is that the mass diagnosis of these diseases, so liable to be confused and so profoundly altered/

altered by concomitant conditions, is merely of statistical interest, and that the mass treatment of both is only a matter of intensity.

A glance at the map will quickly familiarise the reader with the main topographical features of Eastern Central Africa, the most outstanding being Lake Tanganyika itself, flanked at the Southern end by Lake Rukwa on the East and Lake Mweru on the West. Follow the Central Railway of Tanganyika Territory as indicating roughly the age old Caravan and Slave routes from Zanzibar through Tabora to Ujiji.

The particular area under consideration extends from latitude  $7^{\circ}$  to  $9^{\circ}$  south, and is a strip 100 miles wide along and to the East of Lake Tanganyika. It comprises two Valleys of the Great Rift System, the inhabited parts of which are 2500 ft., and an intervening plateau varying from 2500 to 3000 ft. above sea level.

The relative temperature and humidity of the valleys and plateau country modify, and, to a certain extent, determine the local disease, but, what is of paramount importance, the plateau is the fly belt, while the great proportion of the valleys are fly belts. This covers the distance of cattle and sheep and so indirectly the pressure of absence of food deficiency.

INTRODUCTION

GEOGRAPHICAL AND HISTORICAL.

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The relative temperature and humidity of the valleys and plateau country modify, and, to a certain extent, determine the local diseases, but, what is of paramount importance, the plateau is tse-tse fly free, while the great proportion of the valleys are fly belts. This governs the existence of cattle and sheep and so indirectly the presence or absence of food deficiency.

INTRODUCTION /

INTRODUCTION OF SYPHILIS.

The introduction of Syphilis was of course an integral part of the Slave trade. By the third quarter of last Century the Arab Slavers had explored and crossed the great lakes, and, lured on by the immense resources of the Congo basin in both white and "black ivory", had penetrated far into the Manyema Country, the natives of which are renowned for their physique and comeliness. To this day Arabisé Settlements can be seen all along the Lualaba as far as Stanleyville.

The great Caravan route Zanzibar Bagamoyo - Tabora - Ujiji had been long established, but, as the South Congo was opened up to the "trade", the great Arab Slavers "Tippu Tibb" and Mohamed bin Khalfan - Governor of Ujiji (the latter to this day known locally as "Roumalisa" - that is "the Exterminator") felt the need of more direct routes to the great Clearing Centre of Tabora than via Ujiji, and they opened a sub-station on the Eastern shore of Lake Tanganyika about Lat. 8° South, and, from there a Caravan route direct to Tabora. To this day these Centres and this Caravan route can be located by the numbers of aged Congenital Syphilitics that are seen, and one has only to consult the Roman Catholic (The White Fathers of Cardinal Lavigerie) mission registers/



registers for the past 30 years to see what terrible ravages Syphilis produced.

The tribes remote from these routes were very self-contained; - individual movement was at a minimum both on account of the Slave raiders and on account of the continual inter-tribal warfare that existed, and they were not infected. Recently, with the greatly increased movement to and from the Coast, Syphilis is being again introduced and disseminated, but, even to this day, there are tribes among whom Syphilis is unknown.

#### INTRODUCTION OF YAWS.

Let us now turn to the introduction of Yaws into these areas, - on which point, however, history is not so clear. Since Yaws is said to be indigenous to W. Africa it is only natural to expect that conditions being favourable it would spread East into the Congo and eventually to East Africa.

Mouchet<sup>1</sup> mentions that, whereas Yaws had existed in the Congo for a very long time, Syphilis is of comparatively recent introduction, and that there are still tribes there also among whom Syphilis is practically unknown. Gilks<sup>2</sup> from Central Kavirondo, and Callanan<sup>3</sup> working among the Kikuyu, in Kenya Colony, both report Yaws as being of very old standing, and/

and this is only to be understood since the lake barrier is not so formidable there.

While of course every tribe has its own names for the different lesions of Yaws, it is interesting to note that the Kiswahili word for the scaly glistening condition of the hands is "mbaranga" practically the same word as "parangi" of Ceylon. (Castellani). Some Yaws may have spread up from the Coast but, considering that the active infectious lesions are seen mostly in children, this mode is most unlikely, and, it can be assumed that the favourable conditions created by the opening up of the Congo to the slave trade, and the Caravans of men, women and children who crossed Lake Tanganyika and passed down to the Coast, determined the spread of Yaws in the areas under consideration. Be that as it may, it is certain, that 40 years ago Yaws was of comparatively recent introduction, and, owing to the ease of communication was spreading rapidly South along the lake shore, with the result that until recently scarcely a native escaped infection.

It did not then and does not now spread on to the true plateau to the East, a lower temperature and humidity, - a higher altitude, and a better nourished, and therefore more resistant population, proving a successful barrier to its reaching the second valley where conditions were equally favourable to its spread, and/

and even now the northern part of the Rukwa Valley which was early syphilised remains free of Yaws.

We are now then in a position to define the following areas:-

- (1) An area where Syphilis has been active for generations and where Yaws has not penetrated.
- (2) An area where Yaws alone has been present for at least 40 years.
- (3) An area where Syphilis has been active for generations and where Yaws, introduced about 40 years ago, has affected practically all the community. For the purpose of this paper it is sufficient that there be adult congenital Syphilitics who have acquired Yaws in childhood.

Lastly as a Control:-

- (4) An area where neither Yaws or Syphilis exists.
-

After 1900 the incidence and virulence of Syphilis

THE PROGRESS AND THE RESULTS OF THESE DISEASES.

For much information on this subject I am indebted to Adrien Atiman of Karema Mission, - a Sudanese with a Maltese medical qualification, who has been working in this area for the past 38 years. He is a fine old type that is rapidly passing, and a good example of what can be made of the selected African given a suitable upbringing and adequate education.

On his arrival in 1889 he found, in this particular community of freed slaves from the Congo (and as yet non-Syphilised), that Yaws was universal, and he witnessed the introduction of Syphilis. The soil was virgin, and, as later occurred in Uganda, <sup>4</sup> the disease soon became rampant, and with Yaws as a partner, in combination with Malaria, Dysentery and Ankylostomiasis began to decimate whole tribes, and so common was the double infection of Syphilis and Yaws that, the Congolese applied the special term 'Kaswende nyolo' to it. While no mutual protection of one disease against the other was ever recognised by the natives they very soon realised that Yaws in childhood was a trivial affair compared with the fully developed disease acquired later in life, and inoculation of children with Yaws was practised to avoid this.

After/



After 1900 the incidence and virulence of Syphilis diminished noticeably, (only what was to be expected when most had it and with a generation of inherited Syphilitics growing up) and conditions became, as, in other areas where both diseases had long been present, i.e. Yaws inevitable in childhood - Syphilis "smouldering" away quietly but steadily reducing the live birth rate, mainly responsible for the appalling infantile mortality of 38-50 per cent, and maiming and mutilating many of those who survived.

In these Yaws and Syphilis Communities among the halt and the lame, nothing is more striking than the amount of flat foot, particularly in males, as a result of bone and joint implication in childhood and adolescence, for the African should have normally the perfect foot, square and broad across the toes, well arched and tapering to the heel. Add to these the recurrent lesions of hands and feet in Yaws, - mainly also in men, and you have always a considerable percentage of the male population who are not available for labour, - who are unproductive, and who cannot pay the tax. Fortunate it is indeed that the native nervous system is spared!

Quite apart then from humanitarian considerations the Economic importance of these two diseases is manifest, but it was not till 1925 that a cheap suitable/

suitable and specific remedy, and increased personnel, permitted of the Campaign against Yaws and Syphilis being extended to these remote parts of the Territory.

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THE YAWS AND SYPHILIS CAMPAIGN.

In this I am quoting largely from my reports for 1925 and 1926 to the Director of Medical and Sanitary Services, Tanganyika Territory.

GENERAL PLAN.

A headquarters was chosen at the Southern Corner of the district and work was commenced at Kasanga (Bismarckburg) in October 1925, and the immediate population dealt with. As this was exhausted, the range of activities was extended to include patients from a distance, and accommodation and rations provided for out-patients, in addition to the maintenance of a hospital for the more serious cases.

Beyond a certain distance only a proportion of cases will attend, - the others, and these the infectious cases, cannot do so because of their disease, and therefore they must be 'gone to'. To provide for this a travelling unit was rapidly organised, since the hot rainy season was commencing when Yaws is much more prominent. It is important, however, when dealing with adults, not to press treatment during the preliminary Cultivating Season nor yet again during the harvest. It was also realised that Yaws, having a limited "striking" range, lends itself to intensive mass treatment, and that it is better to concentrate/

concentrate on certain areas, and eradicate the disease therein, rather than attempt treatment over a wide district.

#### RECORDS.

Sufficient details were kept to enable each case to be traced, his lesions identified, the amount, nature, and result of treatment estimated, and his disposal determined - no easy task in an area as large as Scotland south of Forth and Clyde, to be covered on foot or by canoe!

#### TREATMENT.

##### DRUGS AND THEIR THERAPEUTICS.

##### SODIUM BISMUTH TARTRATE.

This as being cheap was the Standard drug used and as a routine I aim at a minimum of 3 full doses for Yaws, and 6 for Syphilis as a primary course. For Safari (travelling) work I find a 10 day interval for full doses convenient to patient and dresser alike, but this interval should not be exceeded else the patient is not kept continually saturated with the drug and he relapses. At Headquarters, where other work has to be done, local out-patients can be more suitably injected weekly with slightly/



slightly reduced doses and out-patients on the ration strength can be given short intensive courses to hasten their departure.

Now as to dosage. A full dose I reckon as gr.V but I do not estimate this either by age or size alone. In moving about from place to place I was immediately struck by the varying degree of reaction to this drug presented by different Communities in regard to Stomatitis and local necrosis at site of injection. Profiting from previous experience of Scurvy among railway constructional labour in Portuguese East Africa I very soon recognised that I was dealing with sub-acute food deficiency conditions.

Of paramount importance also is the state of the mouth and any serious effects I have seen from the intramuscular administration of this drug have originated from a septic mouth. (cellulitis and oedema, adenitis, pneumonia etc.) In spare individuals a kind of encystment of the solution may take place - quite aseptic - children bear the drug well, often better than adults. Fat females with clean mouths are the best subjects - pregnant women the worst and abort easily. Different concentrations do not influence greatly the local reaction, and my attempts at an analgesic combination have not been very successful/

successful, which was unfortunate as the local discomfort may discount the therapeutic attractions.

Sod. Bis. Tart. then is a rapidly diffusible drug and is presumably rapidly excreted - it is suitable for primary and active florid secondary cases with the proviso that the interval be not too long. With the exception perhaps of the bone, muscle, and joint pains it is not so valuable in chronic lesions. Another point, just owing to this diffusibility, fulminating cases of secondary Yaws or Syphilis in infants and in debilitated individuals or in those suffering from other constitutional diseases, must be treated with caution if a severe reaction is to be avoided - presumably due to the liberation of organismal toxins.

#### METALLIC BISMUTH.

This is the preparation, par excellence, for Congenital Syphilis, for chronic ulcerations, for the tertiary manifestations generally of both diseases, for use where Sod. Bis. Tart. is contraindicated as previously mentioned. E.g. during pregnancy and where in any case further treatment is necessary but where for any reason the patient cannot be seen again within 10 days. I have used it in the form of "Bicreol" B.W. & Co. and I find this very useful as a sop to the patient's very natural desire for/

for a painless injection and so to encourage him to return for further treatment (not necessarily of Bicrool!). In active Yaws in children it is not so useful - its action not being rapid enough to clear up the infection. It is much less toxic - requires no preparation in the tropics and so can literally be given "by the road side". Where dual therapy is employed it is the Bismuth of Choice. Its cost however is a drawback to mass treatment. As to dosage I find 3 cc. per 10 days in one dose a useful amount and one that is well borne - the increased Bismuth Content over the S.B.T. is obvious (about double).

#### THE ARSENICALS.

The cost of these again for mass treatment is prohibitive and as a routine I limit their use to Primary and Secondary Syphilis so as to bring the patient rapidly under the drug and render him non-infectious. In chronic lesions of the rapidly destructive type in both Yaws and Syphilis these also must be given to arrest the process before irreparable damage has taken place. E.g. "gangosa". In the very chronic lesions, e.g. of hands and feet or in Congenital Syphilis these are not so useful as metallic Bismuth unless in resistant or relapsing cases as dual therapy and in these it is best in the intramuscular modifications such as Sulfarsenol or Kar-sulfan B.W. etc. The lasting effect of these latter /

latter is an advantage (20 days) as also the fact that they can be easily administered by dressers.

SOAMIN AND SODIUM BISMUTH TARTRATE.

On Dr Shircore's personal suggestion I<sup>5</sup> had intended to try this as a control in a hitherto untreated district. I found however on arrival there that on mixing the solutions I obtained a dense gelatinous precipitate and must presume some change in the drugs due to storage.

MERCURY.

I very much regret not having given this drug a trial in Yaws and especially in "gangosa" so as to verify for myself the statement as to its efficacy.

	Total cases	Discharged Cured	Disch. Improved	Seen under Treatm	Died	Under Treatm
YAWS	2595	2132	146	24	4	31
SYPHILIS	451	318	94	18	6	1
Totals	3046	2450	240	42	10	32

Average number of injections per case = 5.

The records of 307 of these cases are appended herewith.

In addition a further 1178 cases of Yaws and Syphilis were diverted for treatment to the Sisters of the Roman Catholic Mission. This brings the grand total



STATISTICS AND RESULTS.

In such a short Campaign (21 months) I have of course made no attempt to draw any conclusions as to the lasting efficacy of the standard treatment given; with such a latent disease as Yaws this would be ridiculous - and, beyond commenting later on the frequency or otherwise of certain types of the diseases, I do not propose at present to make any analysis of the case records, for I hope to re-survey the majority of these cases within the next year or two when sufficient time will have elapsed to give the treatment a trial.

The following are the totals of cases at all stages seen and treated personally in 21 months along with their disposal for statistical purposes:-

Disease	Total Cases	Discharged Cured.	Disch <sup>d</sup> Improved	Not Seen Again	Died	Remaining under Treatm. <sup>t</sup>
YAWS	2395	2198	148	24	4	21
SYPHILIS	431	316	94	16	4	1
Totals	2826	2514	242	40	8	22

Average number of injections per Case = 3.

The records of 2307 of these cases are appended herewith.

In addition a further 1175 cases of Yaws and Syphilis were diverted for treatment to the Sisters of the Roman Catholic Missions. This brings the grand total/

total to 4000 out of a population of under 20,000.

The incidence of Yaws in Communities such as this can, for practical purposes, be measured by the numbers of early florid secondary cases seen in children. In one of the areas during the first year some 187 such cases were seen. Under exactly similar conditions during the second year 33 cases were encountered, and, during my absence, on opening the 3rd year's campaign my Indian and African assistants report 12 cases.

During this 2 years period a total of some 1600 Yaws were treated in this particular area and of these 32 had relapsed or recurred.\* On analysing these it was found that after eliminating congenital or acquired Syphilis, leprosy, scurvy, pregnancy, the breaking down of chronic cicatrised ulcerations and insufficient or unsuitable treatment these could be reduced to 3 uncomplicated cases in which relapse had occurred after the Standard treatment. Considering that about half the cases of Yaws have reminders every hot moist season, these results speak for themselves.

In any case we can take it that Yaws has ceased to be epidemic along the lake shore and that the people have been educated as to the advantages of treatment/

\* Irvine<sup>6</sup> states he had less than 1% return for treatment in a series of 2500 cases over a period of 2-3 years after intramuscular Bismuth.

treatment and how to obtain it. To maintain this however will require constant supervision, ferreting out the more infectious cases in children and treating chronic lesions, for as long as these occur the disease must remain endemic.

Unfortunately the same cannot be said with regard to Syphilis. Primary and Secondary cases in men come voluntarily for treatment, but when the lesions heal pressure is necessary to secure further attendance. Women come later and are even more recalcitrant than the men. This incomplete treatment is to be deprecated, - it creates a false sense of security in both sexes as they are admitted among their fellows as cured when in the natural course they would be avoided sexually for a period covering in most cases the liability to secondary symptoms.

One gratifying feature however is the number of conceptional and other cases among women who are coming for treatment with a view to carrying a child to term and obtaining a healthy infant.

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A CRITICISM OF THESE SHORT COURSE MASS TREATMENT  
CAMPAIGNS AND OF THE METHODS EMPLOYED.

In estimating the efficacy of these short campaigns in Africa much is bound up with the ideas as to immunity in Yaws.

The classical experiments were those of Charlois<sup>13</sup> in 1881 who successfully reinoculated cases who had recovered clinically from Yaws. Sellards and Goodpasture<sup>13 & 14</sup> repeated these experiments and extended them to cover cases cured by Salvarsan and whose Wassermann Reactions were negative. They were also able to re-inoculate patients in the clavus stage and they conclude that "a measurable degree of active immunity" and "a definite though not complete resistance to re-infection" is produced by Yaws. Lacy and Sellards<sup>15</sup> reinoculated cases 6 months and 2 years after courses of Neo Salvarsan and they conclude that this "resistance to reinfection is retained for more than 2 years, which period is ample to permit bringing the disease under control even in heavily infected districts."

In the Philippines<sup>22</sup> intermittent dispensary treatment of Yaws was a failure and a 2 years continuous campaign was adopted, the work being "pressed rapidly and thoroughly" and "caution being exercised in/



in determining the length of time that treatment may be entirely suspended". Sellards<sup>16</sup> has found "no reliable indications in the histories of patients that a mother Yaw has been contracted from a tertiary case" and that for the purpose of simply checking the spread of Yaws in a community it is perhaps sufficient to treat only the primary and secondary stages".

I quite agree. I would even go further and apply this to the reminders or intermediate palmar or plantar lesions - these of course not being of the granulomatous type.

Criticisms have been levelled at the short course treatment campaigns in East Africa - the Dutch East Indies and Western Samoa as producing a vast possibly latent infective population"<sup>17</sup>. As my observations were purely clinical I cannot say anything regarding immunity in Yaws but, whether it be immunity or latency, the period of 2 years appears to be a suitable campaign period from the point of view of efficiency, cost, results, etc., and, in any case, lesions that might develop 2 years after treatment are unlikely to be of the florid secondary type which is the main if not the only infective lesion.

So far while there are numerous reports of mass treatment by the Arsenicals controlled by the Wassermann Reaction, the same cannot be said of the Bismuth preparations. The Wassermann is not applicable to field/

field work but with it as a control it would be interesting to have a standard minimum treatment for secondary cases of average severity as, so far, each worker's dosage and period of treatment has been determined by political or economic conditions rather than clinical. Irvine's results have been mentioned<sup>8</sup> and his period of observation - 2-3 years noted.

With regard to the Arsenicals, dosage varies greatly here too. In Africa these have been used as a routine by Callanan<sup>3</sup> in Kenya who gave 2 doses N.A.B. at 4-7 day intervals, and by Dupuy<sup>19</sup> in the Katanga who gave 4 doses N.A.B. at 3 day intervals, while in Samoa Armstrong's<sup>20</sup> treatment was 3 doses N.A.B. at weekly intervals.

To account for the appearance of further Yaws after intensive treatment by N.A.B. in the florid stage Armstrong considers these to be reinfections due to the active drug having killed out the infection before the body had produced its natural immunity. He had 16% of relapses of secondary cases in 8 months while Moss<sup>21</sup> had 50% cures of 5 years standing after a single injection of 0.6 gm. Neo Salvarsan. These cures must have been very rapidly produced and have therefore practically no immunity and so why have there been no reinfections - unless he considers the other 50% to have been reinfections.

I have always been struck by these relapses with the intravenous Arsenicals and with Sodium Potassium Bismuth Tartrate when we used this drug also intravenously in the early days. Sodium Bismuth Tartrate intramuscularly often clears up florid Yaws like magic - much too rapidly, since rapid absorption usually means rapid elimination and this does not eradicate the infection. I have not used the Arsenicals as a routine but in relapsing cases I have had better results with the intramuscular Arsenicals. E.g. Kharsulfan and with the correspondingly slower Metallic Bismuth. A judicious combination of drugs and routes is essential and is a matter of experience but it has occurred to me that something intermediate between Sodium Bismuth Tartrate and Metallic Bismuth would be more applicable to routine mass treatment.

In the register will be found on pages 21 and 22 one such heavily infected village - Kasote - and on pages 23, 24, 25, 26 and 27 other villages along the same route. The cases falling off till the high plateau is reached and a syphilitic focus encountered.

The date of my visit was in January during the hot wet season and it will be noticed that there was no difference in the type of lesion seen - this is about 5000 ft. In the remainder of this plateau which was drier and inhabited by people having little communication/

THE INFLUENCE OF CLIMATE, ALTITUDE AND MALARIA IN YAWS.

In the geographical introduction I have indicated that I was working in a district with two lake areas at 2500 ft. above sea level, with a hot rainy season and a cooler dry one, and an intervening plateau ranging from 3500 to 6000 ft. in the inhabited parts, the climate here being similar as regards rainfall but the temperatures correspondingly lower.

With certain exceptions it can be said that this plateau is free of Yaws, and these are that in the transitional country between the plains and the high plateau Yaws occurs in certain villages, whose inhabitants owing to tribal connections have intercourse with the villages on the plains. Isolated cases are also to be found spreading from these villages along the main lines of communication. In the register will be found on pages 21 and 22 one such heavily infected village - Kasote - and on pages 23-24-25-44 and 70 other villages along the same route.- the cases tailing off till the high plateau is reached and a syphilitic focus encountered.

The date of my visit was in January during the hot wet season and it will be noticed that there was no difference in the type of lesion seen - this at about 3500 ft. On the remainder of this plateau which was drier and inhabited by people having little communication/



communication with the plains Yaws was never seen. It must be borne in mind however that here we were  $8^{\circ}$  -  $9^{\circ}$  South of the Equator whereas other recent observers - Callanan<sup>3</sup>, Gilks<sup>2</sup> and Stones<sup>9</sup> were at similar altitudes just on the line.

The seasonal incidence noted by Ramsay<sup>10</sup> in Assam was apparent in my cases also, and advantage was taken of this fact in planning the Campaign, although, our temperatures being generally somewhat higher this was not quite so marked except perhaps, as with him, the painful foot lesions. Indeed native boatmen get these at all seasons.

My cases also bear out the observations of Lopez, Rizal and Sellards in the Philippines<sup>11</sup> that temperature and moisture, be they bodily or climatic, determine the granulomatous lesions, e.g. in the vulva and perineum, and much confusion with Syphilis is thereby created in unskilled observers, which is sometimes, in children especially, of medico-legal importance.

Regarding the other point raised by Ramsay, - the influence of malaria in preventing tertiary Yaws, - my experience is just the reverse, because these Yaws districts were all highly malarial. Certainly "fever" of any kind dries up florid Yaws but that it is not cured witness the abundant tertiary lesions in these areas and also following small pox and leprosy.

THE DIFFERENTIAL DIAGNOSIS OF TERTIARY YAWS  
AND SYPHILIS.

At the outset I should say, that while Communities can be found free from Yaws and Syphilis, and where the diseases are combined, I cannot find that any immunity to Syphilis prevails in a framboesial community, nor is Syphilis, when acquired, modified in any way, except the attenuation which occurs in general, when a disease has been long and widely disseminated, and in Africans in particular, where Syphilis, quite apart from previous Yaws may show, although quite untreated, no subsequent sign of its presence except the procreation of Syphilitic children.

It is difficult to reconcile the findings in different parts of the world, and it is impossible to imagine any native race in framboesial countries among whom Syphilis has not been introduced, yet controversy, backed by competent observers on either side, rages over this vexed question. This might be understood if widely different countries and races were at stake, but such is not so. Take, for instance, Fiji and Samoa - Cuba and Haiti. As one way out of the difficulty we note the recent papers by Butler and Petersen<sup>23</sup> who describe under "treponematosis" these debatable lesions as seen in the rural population of Haiti, /

Haiti, while Cordes<sup>24</sup> uses this term in dealing with Haitian labourers in Cuba, and notes that, while recognising the two distinct diseases, he does not attempt to differentiate them, but records the clinical symptoms "irrespective of the disease to which they belong". Such a term though unsatisfactory is useful, and eliminates useless controversy that will not be settled till we have some serological or microscopical means of differentiating the diseases.

Cordes recognises that in all native communities the diseases co-exist. He applies this to qualify Harper's findings in Fiji on the one hand and Nogue's in Senegal on the other, yet commenting on "the absence of primary venereal lesions and the variety of secondary syphilitic eruptions" he says "true syphilis in framboesial infected people is extremely rare".

All this, - especially the finding of corresponding analogous lesions in Fiji, where we are continually informed, there is no syphilis - is very confusing, but when we return to Eastern Central Africa the findings are more consistent, and it is very natural that they should be, as here we are dealing with one race, - the Bantu derivatives, - living under similar conditions. It is agreed by both Belgian and British that Yaws and Syphilis co-exist everywhere, and observations only differ in the relative proportions of one to the other, - Yaws in the/

the Congo and Syphilis in Uganda almost exclusively, while in Kenya and Tanganyika both diseases are common, with Yaws in the ascendant (6 : 1 in my series).

These relative proportions of disease present naturally bias the observer in apportioning the late lesions. Nowhere is this more glaring than in Fiji where "the adherents of the Yaws only theory will, to maintain their position, have to ascribe to Yaws such things as Tabes and G.P.I." (Dr H.S. Stannus in Conversation). We in Africa maintain, I think, a more open mind. Even in the Congo, where Syphilis certainly is not prominent, Dupuy<sup>19</sup> "suggests that if syphilis is latent or missed so often in the European how much oftener must it be in the African native."

With this I entirely agree, and more particularly with regard to the inherited disease, because, here again the taint is present in a far greater number of African natives than can be estimated by looking for stigmata, or examining histories of relatives. There is great variations in the numbers of obvious Congenital Syphilitics reported from Africa but this is no index of the amount of Syphilis present in a community. It is of common observance that the classical sequence of abortion, miscarriage - still birth - congenital child that dies, etc. is rarely seen in conceptional Syphilis in Africans, more/



more often is forthcoming a history of death within a day or two of birth, and if there has been a miscarriage, or syphilitic child the change to a clean child that survives is abrupt, but this child is still a potential Syphilitic. Where the woman has the acquired disease sterility is the rule. In common with Gilks<sup>2</sup> I have noted the effect of even one injection of S.B.T. in determining a pregnancy, and one or two small doses of Bicrool are all that is required to ensure a clean child, but even in this case the child is potentially a syphilitic.

In field work the first point on which the observer must make up his mind is the amount of reliance that is to be placed on native statements and histories. On this also opinions differ, - thus Webb and Holliday,<sup>25</sup> among the intelligent Buganda, place no reliance on the native statement as to the differentiation of Yaws and Syphilis. Cordes,<sup>24</sup> among the Haitians, comments on the reliable observation of primitive people with regard to External diseases. My own experience is, that while one usually commences by being sceptical, one very soon realises that the native is a good observer. This was forced upon me, particularly in public clinics, by women usually, who, on it being suggested that their lesions were due to Yaws, emphatically stated that they were due to Syphilis. I recall two such cases in particular, -  
in/

in one case a soft multilocular ganglion of the back of the hand indistinguishable from the condition seen in Yaws, but the patient, - a woman, - denied Yaws and volunteered Syphilis, adducing as proof that she had borne two syphilitic infants who had died at birth. The other, also a woman, among a long series of Yaws cases, had a scaly dermatitis of the hands. She volunteered Syphilis contracted innocently as a child and she had had four pregnancies of which only the last produced a live child.

It should here be explained that Syphilis is not considered a disease of shame among these African tribes. Gilks also, notes "the unblushing frankness of both sexes at public clinics." I find that these public clinics detract in no way from their popularity, and better results are obtained, since, while a native may lie in private he cannot very well do so before all his fellows. Even the Chiefs etc., while they may wish to be injected privately to preserve their dignity, have no objection to declaring their misfortunes in public.

Reliance is sometimes placed in differentiating these diseases on the particular area from which a native comes, or whether he be urban or rural. I have already defined certain specific areas, and a glance through my case book will confirm this. Formerly these premises were satisfactory, but now, with very much /

much increased communications and native movement, - for the natives, especially the women, are great travellers, these carry less weight, and in no case must they be allowed to override the clinical appearance.

This brings us to the last point in diagnosis. I have remarked in the introduction on the apparently hopeless confusion which confronts the stranger in Africa. Gradually however after visiting different areas, - after learning how to elicit information from natives, and having thus seen typical examples of each disease per se, he is enabled to make a diagnosis of one or other condition, or where they are combined to estimate the relative part of each disease in the production of any given lesion, and by weighing up the patient and his lesions to develop a kind of Yaws and Syphilis sense. Generally speaking if a native has the information you will get it in good faith if you set about it in the right way, but he may have forgotten, or the syphilitic infection may be acquired innocently in infancy or childhood and he know nothing about it.

I have tried to contrast these differences of Yaws and Syphilis in my photographs. The lesions of Yaws are more chronic - more superficial and less destructive than those of Syphilis. The loss of tissue in Syphilis is marked; the scars are dense, irregular,

irregular, perhaps keloid, and adherent to deeper structures, e.g. bones, and they have a predilection for certain parts such as the extensor surfaces generally knees, shoulders, hands, in particular, yet, the disability may not be great. In Yaws, on the other hand, even an extensive ulcerative process involving a whole limb may heal with a pliant papery scar, although, in the region of joints, contractures are common, the joints themselves ankylosed and a much greater loss of function produced. The scars of secondary Yaws are typical - smooth, soft, glistening and membranous looking - sometimes like tissue paper - sometimes like fine parchment - sometimes depigmented - sometimes hyperpigmented but always flush with the skin. No better example can be found of the difference between Yaws and Syphilis than where these diseases attack tissues previously damaged by disease, e.g. elephantiasis or leprosy. Some of these are illustrated by photographs while many other examples are to be found in the case register.

So much for general points. The controversial lesions themselves will be discussed in detail, but, before doing so, it may be as well to dispose of what has been observed about Syphilis per se, and also certain conditions whose etiology is disputed, but which have not been observed in this series.



SYPHILIS PER SE.HEREDITARY.

Besides the points which have already been noted regarding the frequency of congenital and inherited Syphilis, and the factors in their production, i.e. acquired and conceptional Syphilis, - many cases occur where Congenital Syphilitics are mated with Acquired Syphilitics, the offspring of course in this case being Syphilitic, and the results are disastrous, e.g. 1601 and 1602 in case book with 7 children born, all since dead - here the woman was also a leper - the woman Paulina whose photo. is reproduced and others. Again, note the large numbers of Syphilitic infections acquired innocently in infancy or childhood, e.g. 1592, who stated she had had 4 miscarriages, 20 dead infants and 3 children alive of whom 1 was a leper and another (1600) a dwarf with spinal curvature and mental deficiency. Her husband was probably also an acquired Syphilitic. Sometimes again this Syphilis innocentium of infancy produces in adolescence results comparable to the Congenital type.

Regarding Stigmata I have shown a photograph of what I consider to be a typical Bantu congenital facies, the most prominent feature being the squaring and bossing of the skull in situations where the Bantu head is not prominent. Webb and Holliday<sup>25</sup> and Stones<sup>9</sup> /

Stones<sup>9</sup> find the exact opposite. Hutchinsons teeth are impossible in these Communities where mutilation and extraction of the incisors is practised as a tribal mark.

I have only seen one example of classical interstitial Keratitis.

"Syndactylie" Nogue<sup>26</sup> has not been encountered but polydactylism is common though I have not investigated it as an expression of Congenital Syphilis.

Saddle-nose, rhagades, sabre tibia, and perforation and scarring of the palate and pharynx are common and there are numerous deaf mutes - syphilitic dwarfs and epileptics.

#### THE ACQUIRED DISEASE.

I rarely saw Cardiac cases in these Syphilitic communities and then they were neither of the specific type nor history, while as for visceral Syphilis in Africans I never consider it in diagnosis.

Regarding nervous Syphilis, while I have seen cranial nerve palsies, I cannot recall any parenchymatous conditions, nor have I seen any definite parasyphilis. I recall however, in reading the papers by Hermans<sup>27</sup>, Kirschner<sup>28</sup> and Mulder<sup>29</sup> on parasyphilis in Coloured races, - several cases, in which the mental and moral condition of Syphilitics appeared to alter after treatment by the arsenicals; - one, of a woman/

woman who quickly became depraved, destructive, and obscene, a quite unusual form for insanity to take in Africans, who may become maniacal but who are usually merely demented. The village idiot of these parts is usually a genial fool. Another case, - that of a man, who was in my personal employ for 5 years. He had had Syphilis previously, and had had one or perhaps two Arsenical injections. He then developed a palatal perforation - (a quite uncommon lesion in Africans in acquired Syphilis) - again receiving an arsenical or two, and from time to time, as he fancied he had reminders, he would appear for an injection. He was a Swahili, (i.e. he had a percentage of Arab blood in him) - a good Mohomedan, and far beyond the average native in intelligence and capabilities.

His descent was gradual but steady - he deserted his wife and child, and had one woman after another, - he began to drink, (a religious lapse) to lie, and to steal on an ambitious scale, but the most outstanding features were the ideas of grandeur which he conceived, and attempted to put into execution, - projects far beyond the dreams of an African native. Wender<sup>30</sup>, discussing the psychoses of Coloured races in Panama, says that in G.P.I. "the one time considered necessary grandiose delusions are usually represented by simple dementia" or else "defective judgment/

judgment and reason - impaired memory or depressions and excitement", and he has confirmed this by C.S.F. examination. This refers to "Coloured", but hundreds of cases of G.P.I. are reported from U.S.A. in full blooded negroes by Hill<sup>31</sup>.

Before discussing debatable lesions it might be as well to clear the way by dealing with certain negative findings, or with conditions on which opinion is more or less agreed.

To commence with:- I have never seen any lesions of the true mucous membranes in Yaws nor any analogy to Syphilis in regard to Congenital, Visceral or Nervous manifestations.

Furfuraceous Eruptions have not been recognised as such - the only resemblance to this being the desquamation that is commonly observed in native children during epidemics of a modified type of measles. ("Chirua").



G O U N D O U.

Never have I seen anything resembling this condition, nor has the Sudanese Adrian Atiman in his 38 years experience. Be it noted too, that these Bantu peoples have not the gross negroid features of the W. Coast natives, and sometimes, - and more especially where there are Arabic or Nilotic mixtures, the nose may be fine and clean cut, thus allowing of even minor degrees of this deformity being recognised. Macnaughton<sup>32</sup>, however, records two cases of Goundou from Tanganyika Territory, presumably from the coastal area, and recently Chesterman<sup>33</sup> notes the occurrence of one single case of paranasal swellings - clinically Goundou - in 3000 cases of Yaws.

CIRCINATE OR RINGWORM YAWS.

In my series of 2400 cases of Yaws this lesion occurred 10 times, - mostly on face and neck, - irrespective of age or sex. A history of Yaws was present in all cases, - mostly from one to three years previously, but one case was 7 years and another adult case had had Yaws in childhood. In only one case was there any suspicion of Syphilis too.

Howard Fox<sup>34</sup> describes the circinate Syphilide as "the most striking dermatological peculiarity of the negro", classifying it "with Keloid and Elephantiasis/

Elephantiasis as common and distinctive negro affections". Fox's other publications, 35 and 36, and the various skin atlases, besides the American statistics, amply bear out this peculiar frequency. I have not remarked this in East African natives nor have I remarked the connection between Circinate Yaws and "gangosa" mentioned by Schmitter<sup>37</sup>.

These circinate groupings of papulo-squamous or pustulo-papular elements in Syphilis may be scaly or exudative and crusting, and hence may very closely resemble Yaws; in time of occurrence too, grouped Syphilides being "usually recurrent Eruptions and quite late in the tertiary period, although sometimes seen in the so called Secondary Stage". Abraham and Haldane Davis<sup>38</sup>.

#### JUXTA ARTICULAR NODULES

#### AND CHRONIC BURSAL CONDITIONS.

I am considering these together, because they occur in association often, and because they appear to be part of the long recognised fibrous tissue reaction of dark skinned races to irritation, be it physical, chemical, micro-organismal, or parasitic.

These conditions occurred in my series as follows:-

Juxta/

Juxta articular nodes	11	)	
		)	Total 17
J.A.N. and Solid Bursa	3	)	
		)	in 2400 cases.
Bursal conditions alone	3	)	

All were in adults of full or old age, and in the proportion of 10 females to 8 males. Without exception all the female cases showed the affection in the knee region - due no doubt to their constant kneeling to shred and grind food stuffs in their primitive mills. Without exception also all had a history of Yaws and Yaws only. That none of my Syphilitic cases showed this is rather extraordinary considering the records of Palaska<sup>39</sup> in Algeria, Akovbain<sup>40</sup> in Central Asia and other workers dealing with pure Syphilitic populations.

These cases were all truly Juxta articular, and more or less intimately connected to bursa or joint, so that the vexed question of nomenclature ("Juxta articular nodes" versus "Nodes of bony prominences") debated by Jeanselme<sup>41</sup>, Steiner<sup>42</sup>, and others, - does not occur here. In one case, No. 1876, with 2 nodes of R. elbow the size of pigeon's egg, - after treatment only very small fibrous beads remained, with a thread-like attachment to the joint capsule.

are given multijudicial and feel as if there are air inside. In every case a very distinct fluid is

obtained. They are very amenable to treatment.

17 cases of Ganglion were enumerated, - equally represented/

TENO SYNOVITIS AND GANGLION.

This teno synovitis may be local or diffuse. Locally, there is swelling on the dorsum of the wrist and hand over the annular ligament and tendon sheath extensions, - soft, flabby, and gelatinous, with sometimes an appearance of pointing at one place, i.e. a commencing ganglion. It is a sub-acute process, with mild oedema of the hand, and pain of a rheumatic nature along the course of the tendons and their fascial origins from the muscles of the forearm, - and with creaking in the sheaths.

The interphalangeal joints in African women can usually be hyperextended. In early cases of teno-synovitis while the fingers are normally held mildly flexed, they can be locked in hyperextension, owing to the contraction or adhesions that have taken place in the extensors too. Later, changes occur in the joints preventing full extension, and the characteristic flexion of the fingers in Yaws becomes permanent.

When ganglion is developed one or more circumscribed subcutaneous swellings appear on the back of wrist and hand. They move freely under the skin, - are often multilocular, and feel as if there was air inside. On evacuation watery gelatinous fluid is obtained. They are very amenable to treatment.

17 cases of Ganglion were encountered, - equally represented/



represented in men and women, and all in adults with long standing infections dating from childhood.

In one case this occurred as the first reminder of Yaws in 25 years.

With one exception, all had a history of Yaws and Yaws only. The exception, - a woman, volunteered Syphilis and had borne two Syphilitic infants. This hardly corresponds with the fact that teno synovitis in Syphilis is usually described as occurring in the early secondary period.

The literature on the subject is scanty.

#### PALMAR AND PLANTAR LESIONS.

Ruling out the secondary or recurrent Granulomata which may occur on the palms and soles in Yaws, the other lesions are open to very great confusion. All grades of hyperkeratosis, - atrophic skin conditions, - dermatitis and fissuring, or of depigmentation occurs in these lesions, and while practically all are caused by Yaws, every now and then Syphilis crops up in the history. The impression one gets is, that the localised patchy hyperkeratotic areas on the palms and fingers with the production of black dots, - the extreme white powdery or scaly hand lesions, and the linear cracks in the soles, are more particularly, due/

due to Syphilis; while the more diffuse hyperkeratosis, and the dermatitis and fissuring of the palmar surface of hands leading to contractures are due to Yaws; while depigmented conditions are common to both.

The remaining conditions I propose to discuss under the heading:-

#### YAWS AND SYPHILIS COMBINED.

Either as

- (1) (Yaws Superimposed on hereditary Syphilis or on (Syphilis innocuum of infancy or childhood  
 or {  
 (2) (Yaws following acquired Syphilis or vice versa.

In the systematic examination of natives in their villages, which is essential to a successful campaign, extreme or advanced cases are rounded up who would not otherwise be seen. Even among those who can seek treatment at the Centres there are fulminating or malignant cases, or cases of extreme chronicity, which stand out, in as long series of cases of average severity, as would a separate disease. Indeed, in the native opinion and nomenclature, they constitute a separate clinical entity, and to this syndrome they have given the name "Mooti".

This word is merely the Bantu for 'medicine' and refers to the infusions of the roots, twigs, leaves/

leaves, etc. of trees (miti) which constitute the bulk of native remedies, and with which this condition is treated. By "Mooti" they mean widespread bone and joint lesions, - gross ulceration of skin, destruction of nose, and the maiming and crippling results of these - in fact to a kind of 'grand slam' of tertiary conditions chronic or recurring.

These cases cannot be accounted for by difference of age, - tribe, or environment, - by poor physique, under-nourishment, or even by deficiency disease; - they can only be accounted for by some disease combination, and by a process of exclusion this resolves itself into that of Yaws and Syphilis, - most commonly Yaws and Congenital Syphilis.

So far then for independent observation.

A subsequent search of the literature reveals that this of course is no new idea. Kindleberger<sup>43</sup> in discussing gangosa concludes that "it is probably a tertiary stage or sequel of untreated Yaws with a more or less strong element of hereditary syphilis". And Sellards and Goodpasture,<sup>14</sup> repeat that "the possibility of Yaws and Syphilis co-existing must never be lost sight of". These statements were based on Wassermann reactions and lutein tests.

I did not have the advantage of these, but based my opinion on purely clinical grounds, with of course the /

the patient's personal and family history and with the relative incidence of the two diseases in the different areas already defined.

To dismiss first of all:-

#### YAWS AND ACQUIRED SYPHILIS.

Eight men with such a history sought treatment for various recurring ulcerative conditions, amongst which were, one nasal case, one palatal case, and one naso-pharyngeal case. These will be considered later under "Gangosa".

#### YAWS AND CONGENITAL SYPHILIS.

Here I used the word Congenital advisedly as opposed to inherited. There were 30 such cases in the series, of which 3 were ordinary florid secondary Yaws in children (2 males and 1 female), who received the Standard Course of Sodium Bismuth Tartrate in the ordinary way, and one of them relapsed. Compare this ratio (1 : 3) with the corresponding relapse rate for uncomplicated cases (3: 184) q.v. Antea.

The balance, 27, were adult females and they presented late secondary recurrent, or a combination of tertiary lesions. Of these, 11 relapsed, and thus Congenital Syphilis accounted for more than one-third (12 : 32) of the total relapses from all causes, and doubtless the inherited taint might account in addition for a similar if not greater proportion.



(I should state that this series contained one woman - No.1845 and Photo. - who had acquired Syphilis innocentium in infancy but was for practical purposes a Congenital).

Illustrated descriptions of some of these Yaws and Syphilis combinations are given, and others are discussed under Gangosa. (see later).

The illustrations in Cordes<sup>24</sup> article are of similar lesions, and he appeared to have been working under similar conditions. His figures 4, 5, 6 and 7 represent extensive cicatricial skin lesions on shoulders, buttocks and face resulting from a superficial cutaneous infiltration, causing at once gummatous ulceration and fibroid induration. The same applies to those of Moss and Bigelow,<sup>44</sup> whose Figs 23, 24, 25 and 28 are of obvious Congenital Syphilitics, and indeed the author admits that many of these "had the bridge of the nose destroyed and perforation of the hard and soft palate".

Dupuy<sup>19</sup> "hesitates to ascribe to Yaws all the sores, deformities, etc. that are seen in the Villages," but I would go further than that, and ascribe practically all to Congenital Syphilis or the inherited taint and their combination with Yaws.

#### JOINT CONDITIONS IN BOTH DISEASES.

In Yaws a common and pathognomonic lesion is a mild dry arthritis of the interphalangeal joints of/

of the fingers, - especially the proximal, - movement being limited, and the joint held flexed and ulnar deviated. The ankle joint is as commonly affected and swelling of the feet occurs on walking. The process here is even milder and the joint returns to normal except for pains.

Arthritis of the Knee and Elbow is occasionally seen as a mono-articular condition, - these are more acute and painful, simulating tubercle. They however do not break down but eventually clear up with more or less lipping of the articular surfaces and limitation of movement.

It is interesting to compare these uncomplicated Yaws lesions with what happens in Yaws and Congenital Syphilis as exemplified by Case No. 2176 of which a photograph is given.

The right Knee was swollen, - slightly hot and definitely tender, - it was full of fluid but was not tense, and the periarticular inflammation was quite local, thus giving a square appearance to the swelling - not a spindle. On passive movement a crunching sensation is felt by the hand such as is experienced in compressing snow to form a snowball, and some tags and fringes could be detected in the joint. The articular surfaces were irregularly lipped, but there was little limitation of movement. Pain is not prominent and the patients walk about on/

on these joints.

The left ankle was also acute, while the left knee and right ankle were settling down for a similar process.

Except for the age of the patient, 30 years, this would appear to be identical with the Symmetrical Serous and gummatous Synovitis and Chondro-arthritis of Congenital Syphilis as described by D'Arcy Power.<sup>45</sup> He mentions these as being among the latest manifestations of Congenital Syphilis and gives 13-19 years as an age limit. This woman was considerably older.

Teno-synovitis is not mentioned as a congenital lesion but occurs in Yaws, while the nodular-gummatous or "studded" lesions as they have been called occur in both Syphilis and Yaws but being here of a very superficial nature incline one to think that Yaws is the principal factor in their production.

From the above will be seen the difficulty and confusion experienced in diagnosing these cases and this is further exemplified when we come to consider 'gangosa' or rhinopharyngitis mutilans.

#### "GANGOSA", RHINOPHARYNGITIS MUTILANS.

In my series of uncomplicated Yaws there were 6 cases showing active ulcerative conditions of the soft parts of the nose (including the cartilaginous septum), and there were numerous examples of the corresponding healed condition to be seen. This commences /

commences as a recurrent Yaw of secondary type at the muco-cutaneous junction, perhaps up to 30 years after infection (unless this be a reinoculation), and it invades and destroys the fleshy part of the nose and cartilaginous septum to a varying degree, but never very extreme and usually unilaterally.

Van Dijke<sup>46</sup> in his "Group C" notes similar recurrences which he presumes would proceed to "gangosa".

In the Yaws and congenital Syphilis Series it occurred 6 times, three of which were relapses after one or more treatments. In one case there was a concomitant perforation of the palate which of course I consider Syphilitic since I do not recognise any mucous membrane lesions in Yaws.

In both these groups the granuloma appeared as an ordinary framboesoma only it was destructive. Why this should be and why if the destruction were due in both groups to a syphilitic taint it should stop short of bone destruction I cannot say.

In the next group - Yaws followed by acquired Syphilis, naso-pharyngeal ulceration involving all tissues occurred once and this in no way differed from naso-pharyngeal ulceration due to Syphilis such as I have seen in a debilitated European in the tropics. Apart from Syphilitic lepers, only one case in the whole series (Yaws or Syphilis) was encountered that approached the condition described



as Rhinopharyngitis Mutilans, and this was in a woman who had acquired Syphilis innocently as a child (and who may of course subsequently have had Yaws). Such cases are seldom seen unless a systematic comb out of the villages is made.

The literature on the subject opens with the classical description on the condition in the island of Guam by Leys<sup>47</sup>, who excludes congenital Syphilis as a factor, and however concrete may be the descriptions, reports which have subsequently been made regarding the incidence of Syphilis congenital or acquired on that island, vary considerably. Kerr<sup>48</sup> reports that Odell had "Effective" results with the old fashioned Syphilis mixture and that Crow found their relatives to have positive Wassermanns also (but of course Yaws might give this too), and Kindleberger<sup>43</sup> admitted there was plenty hereditary Syphilis there as shown by the Lutein test.

Summarising the other reports where both Yaws and Syphilis are present, the incidence of "gangosa" varies with the prevalence of the latter. Thus no cases are reported from the Katanga and Kavirondo where syphilis is not prominent, while there are plenty cases in Uganda where Syphilis is common. Nowhere is there 'gangosa' where Syphilis has not been reported, except it be in the famous Fijis, and in this connection Powell<sup>49</sup>, who watched the introduction of/

of Yaws into Assam, was previously diagnosing as "Syphilitic destruction of the face" what his colleagues were publishing as gangosa, and 10½ years subsequent experience of Yaws did not alter his opinion. It may be remarked however that this was not long enough in view of some of the delayed recurrences I have cited, nor to have allowed of there being adult congenitals who had contracted the disease in childhood.

Nicolas<sup>50</sup> reports from the Philippines the offensive smell and crusting of these ulcerations, a fact which in itself is almost pathognomonic of Syphilis.

Finally the fundamental difference between Yaws and Syphilis is that the former is superficial and chronic. Why then should it in this one region of the body break all its conventions. Remembering that "necrosis of the bone is almost unknown except in connection with Syphilis" (St Clair Thomson) I consider that it does not do so, but that Syphilis is responsible for the spread of all nasal ulcerative processes from without and for both the origin and spread of these from within.



PHOTOGRAPHS AND DESCRIPTIONS  
OF ILLUSTRATIVE CASES.





1944

2186



THE CONGENITAL FACIES IN THE BANTU RACE.1944 Nawiya binti Mikomo.

A young girl treated for periostitis due to Yaws. With the exception of the nasal deformity she presents in addition a typical Bantu Congenital Syphilitic facies; forehead square in both planes, prominent, and overhanging the lower face; expression old and anxious; 'wool' abundant, fine and frizzy; eyelashes long and fine; mouth puckered and radically scarred; whole face ape-like, lined and wizened.

The woman in the centre is of the same tribe - compare the heads.

2186 Thoma bin Fabiano.

A male child with Congenital Syphilis - overhanging bossed forehead, bridge of nose sunk and active ulceration of the leg - this latter cleared up on Sod. Bis. Tart. intramuscularly.

CONGENITAL SYPHILIS.

1963 Lezina binti Kaswende (i.e. daughter of "Syphilis")

Evidently a Congenital Syphilitic. In childhood she had had a bilateral naso maxillary ulceration resulting in complete occlusion of the nostrils. Her six children are all dead and in this case she is evidently married to a Syphilitic.



CONGENITAL SYPHILIS AND YAWS - THE CONDITION  
KNOWN BY THE NATIVES AS "MOOTI".

2176 Nantrii binti Waleka.

Aged about 30 years; a congenital Syphilitic (palatal scarring and perforation) who contracted Yaws in childhood now presenting the syndrome recognised by the natives and called by them "Mooti", i.e. medicine derived from the juices of shrubs and trees (with which the disease is treated).

There are extensive glistening pliable scars on the buttocks and this represents the original Yaws. She had no further manifestations of either disease till after the birth of her child (which was clean). She now presents:-

- (1) A nodular gummatous infiltration of the skin of the cheek and right shoulder in process of healing with Keloid scarring (partly produced by the juice of the Euphorbia species).
- (2) An active teno-synovitis of the R. hand extensors. The left fingers are stiff and contracted as the result of a similar process.
- (3) An active Synovitis and Chondro arthritis of R. knee and L. ankle.

The left knee, R. ankle and R. elbow have been through a similar process but have settled down with minor deformities.

Note the Woman's age as determining what element of Congenital Syphilis there is in this case.



2176



CONGENITAL SYPHILIS AND YAWS.Paulina and her child.

This woman is a Congenital Syphilitic married to a man with Acquired Syphilis - the child being obviously a congenital too. Both have active florid Yaws that of the woman being probably a reinoculation from the child as her face has previously undergone the diffuse superficial ulceration which appears to result from this combination.

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Paulina and her child.

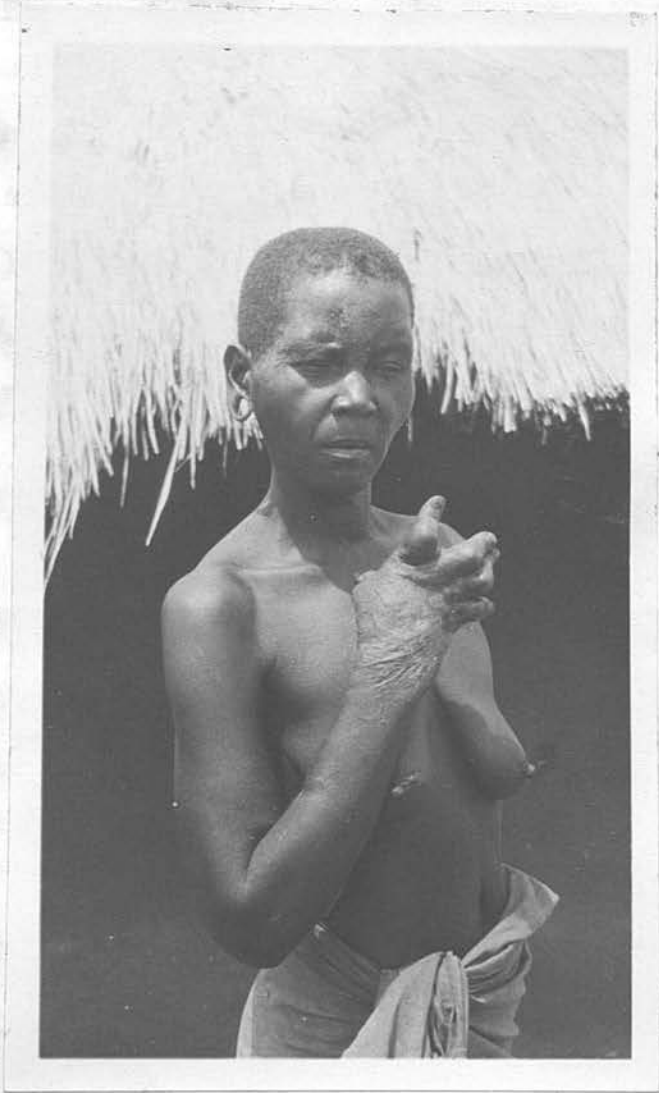
YAWS IN CONGENITAL SYPHILIS.208 Wakapembe binti Kifunda.

A Congenital Syphilitic who had had a hip joint or epiphyseal condition in childhood resulting in deformity.

At puberty she had Yaws and 5 years later a dactylitis and arthritis of R. hand commenced. This was followed by superficial nodular cutaneous ulcerations of shoulder and face. The extreme dactylitis in conjunction with an old hip joint deformity might suggest a tubercular element but this could be ruled out in this district and the conditions cleared up on soluble bismuth but relapsed and were soundly healed by Karsulfan intramuscularly.

Note the Woman's age in this case in connection with the joint lesions.

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208.

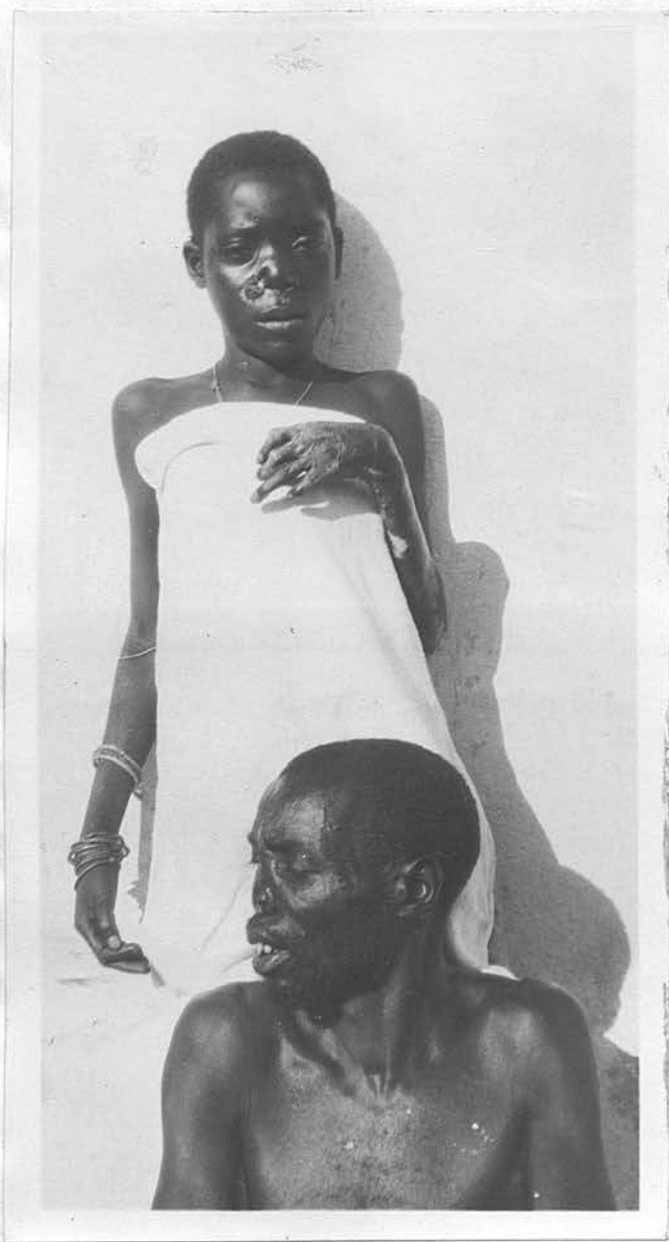


YAWS IN CONGENITAL SYPHILIS.54 Beta binti Kandeke.1083 Nariulu binti Kanongbe.

Both Congenital Syphilitics who contracted Yaws in childhood. They show the results of periostitis, arthritis, osteitis, dactylitis, etc. In the first case healing was complete in 5 weeks after 25 grains Sod. Bis. Tart. Tin.

The second case recurred after a course of 40 grains S.B.T. but sound healing was obtained by metallic bismuth in the form of "Bicreol".





721

392

ILLUSTRATING COMBINATIONS OF SYPHILIS AND YAWS.721 Chiringalla binti Kachlema.

A girl about puberty: not an obvious Congenital but undoubtedly had inherited Syphilis, Yaws was contracted in infancy. When seen there was an extensive crusted ulcerative condition of the buttocks and of the left elbow, wrist and hand which were ankylosed and contracted. These were somewhat resistant but cleared up after 20 grains S.B.T. Five months later she returned with a typical florid framboesial lesion extending crescent-wise from right nostril to lip and eroding the soft parts of the nose. This took 4 months to clear up and only 1 month later recurred at the muco-cutaneous junction and extended on the cheek (photo). Firm healing was obtained on dual therapy ( Arsenicals T.V. and T.M. and Metallic Bismuth T.M.) and the correction of the food deficiency factors as in the other cases.

392 Kumambi bin Kasonso.

History vague but undoubtedly previous Yaws and most likely subsequently acquired Syphilis. The Cartilaginous Septum has been destroyed but the bone is intact.

These cases illustrate the difficulty with which one is faced not only in differentiating the lesions due to each disease but also the particular stage in which the diseases are, as well as the question of latency-reinoculation or reinfection.

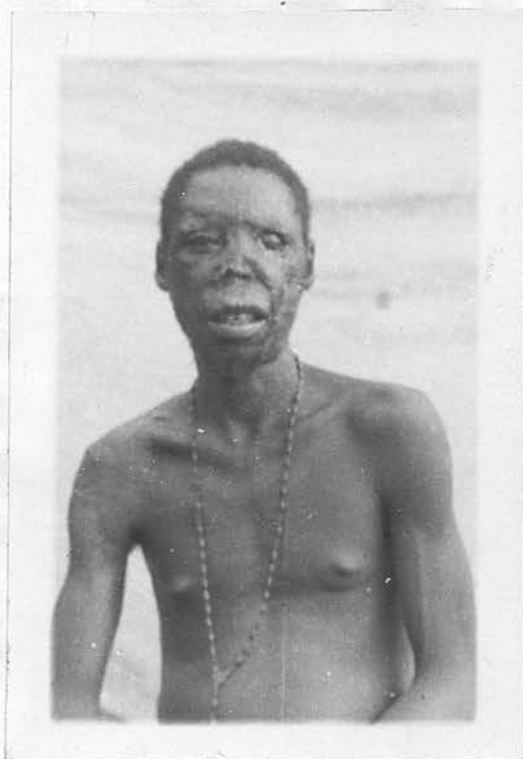
They also illustrate my conception of the Yaws element in the production of the nasal destructive condition to which the loose term "gangosa" is applied.

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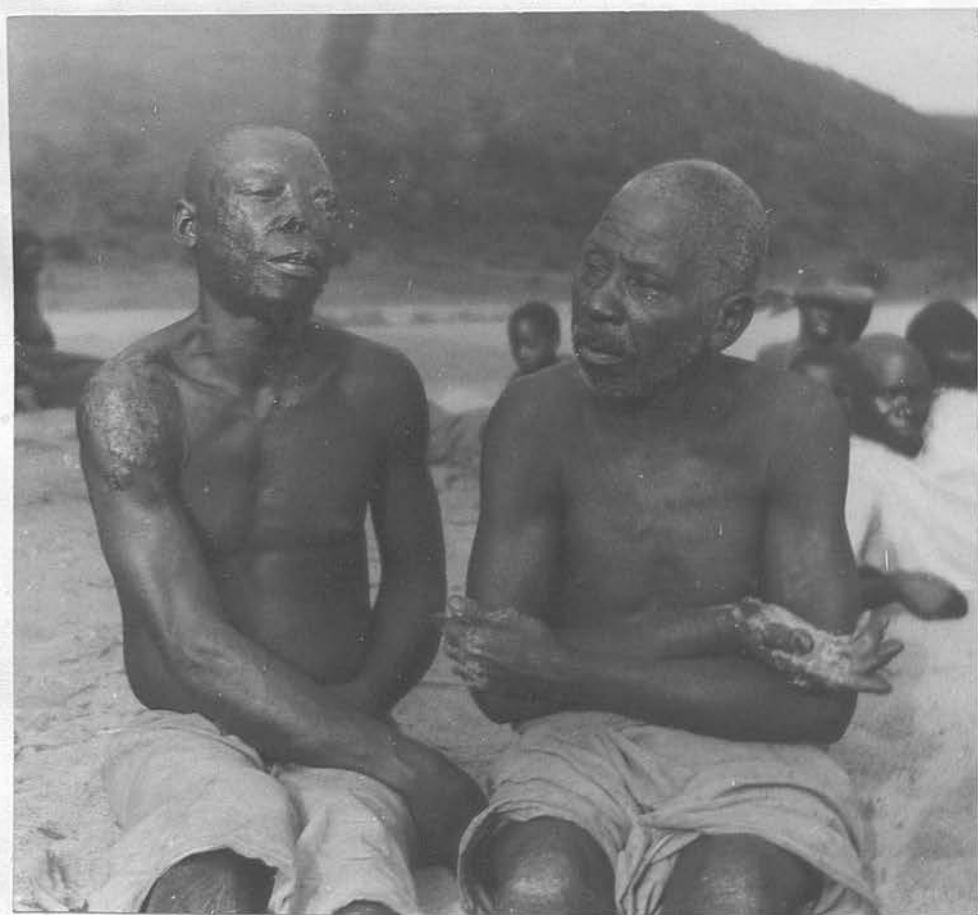




463



463



463

2177

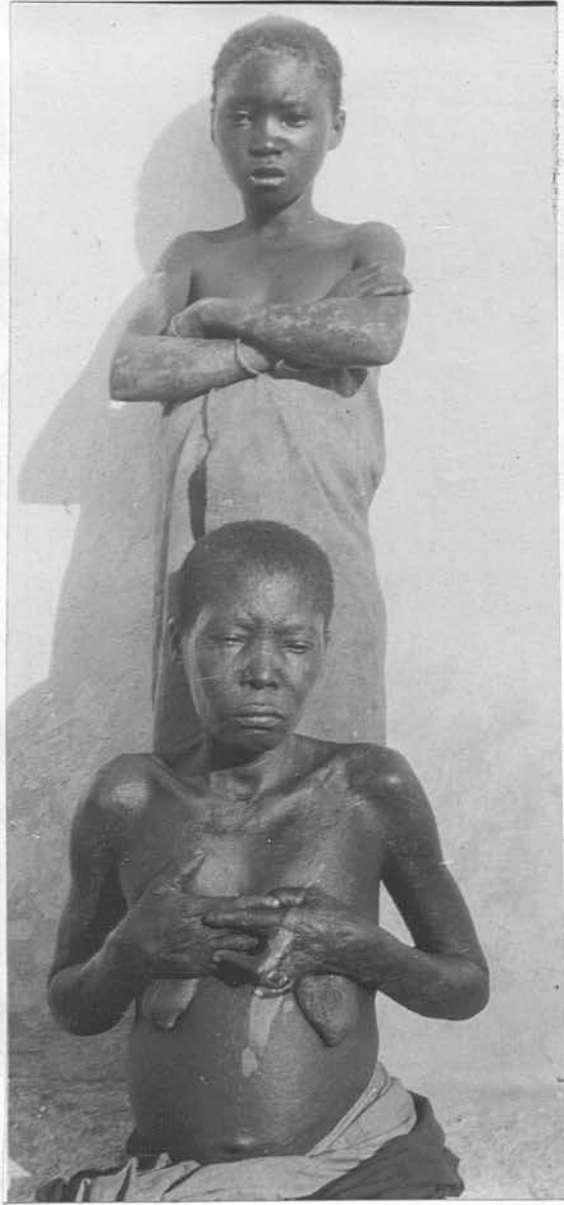
YAWS FOLLOWED BY ACQUIRED SYPHILIS.463 Michaelle bin Chipeta.

When 12 years old he contracted Yaws. After 6 years quiescence this recurred in the nose at the muco-cutaneous junction. This did not extend to the nasal or palatal bones but was confined to soft parts externally. Presumably about this time he contracted Syphilis. Subsequently a superficial ulceration commenced over the left eye and quickly covered the whole face except the lower lip and chin - this also being confined to the soft parts and the L. eye being only secondarily affected (ectropion - panophthalmitis). Later the R. deltoid region was involved in a superficial nodular cutaneous gummatous infiltration partially breaking down and resulting in the characteristic Keloid scarring (partly the result of native medicinal applications) and later still a cutaneous gumma on the back of R. hand was on the point of breaking down when successful treatment by the soluble and Metallic Bismuth preparations was commenced. Note the Superficial nature of the process in spite of the superimposed Syphilis as if the Yaws element predominated and thus lending support to those who recognise a relative immunity to Syphilis to result from Yaws.

ILLUSTRATING THE EXTREME LATENCY OF YAWS.2177 Kariatira bin Itala.

He had Yaws as a child and is now 60 or thereabouts. He shows a creeping patchy depigmentation of the gauntlet area of hands and forearms extending higher on the palmar aspect. There are zones of lighter coloured glistening skin and the pinky white patches stand out on these. The palms are scaly and powdery white in spite of ingrained dirt and in spite of the very long standing infection he had active Yaws of the Secondary type breaking out on the hands.

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Teresea and Agnesi.



YAWS AND SYPHILIS WITH A GENERALISED HYPER-  
KERATOSIS.

Teresea and Agnesi.

Mother and daughter. The mother is a Congenital Syphilitic or to be more correct an inherited Syphilitic with Yaws superimposed in childhood and presents the Syndrome mentioned elsewhere.

The child had had Yaws only.

Both had a diffuse skin condition alternately ichthyotic or hyperkeratotic and scaly and subsequently becoming eczematous or impetiginous.

Intensive treatment with Sodium Bismuth Tartrate produced no improvement.

from assay with a -----

YAWS AND CONGENITAL SYPHILIS IN COMBINATION

("MOOTI")

1848 Alonisi binti Tamarra.

Congenital Syphilis and Yaws, ankylosis and contractures of R. wrist and hand. Scars of previous ulceration on knees. Left hand active dactylitis, arthritis and ulceration. Cleared up in 6 weeks with 20 grains Bis. Sod. Tart. She has had 2 children who died - the husband is most likely an acquired Syphilitic.

2150 Tanse binti Mohammedi.

Yaws in childhood. Now a young woman complaining of limb pains and swollen feet. She also shows a teno-synovitis of the dorsum of the hand. This has an appearance of pointing and represents a commencing ganglion. After 10 grains S.B.T. was well enough to 'run away' with a native soldier.



2150

1848

This man came among a batch of florid Yaw cases from an area where Syphilis was rare. There was no evidence of Syphilis either congenital or acquired and we must assume this to be uncomplicated Yaws. The lesion is discussed in the text. Suffice to say that this secondary manifestation cleared up in a few days with Sod. Bis. Tartarate intramuscularly.





1845

1846



SYPHILIS AND YAWS IN CONTRAST.1845 Kaffisue binti Songula.

Syphilis acquired innocently in childhood - quite a common history in these parts. Yaws was contracted as an adult and subsequently there developed the combination of synovitis and chondro-arthritis with the nodular gummatous ulcerative condition of skin which is noted elsewhere.

1846 Wandunda binti Inwanakapufi.

Yaws in childhood but no history of Syphilis. She also has had an ulcerative condition of the forearm but here the process has been superficial and confined to soft parts leaving pliable, non-adherent glistening parchment scars in contrast to the contracted and adherent Keloids of that above.

Contrasts such as this can easily be multiplied and one cannot but be struck how deeper ulceration and more enhanced fibrous tissue reaction occurs whenever any element of syphilis creeps in and more especially where it is the "Senior partner" as in the first case.

They seem to bear out also the point raised by Dr Stannus that Syphilis acquired sufficiently early in infancy produces to all intents and purposes "Congenital Syphilis".



206

209

FURTHER CONTRASTS SYPHILIS AND YAWS.206 Wasilatu binti Kiteim.

A congenital Syphilitic who later contracted Yaws. She also had mild elephantiasis. The extensive superficial scarring can be made out. The R. foot was a mass of tubercous protuberances resembling enchondromata - interspaced with sinuses and superficial ulcerations - a condition of 'pseudo-mycetoma'.

209 Wamasinge binti Namwanda.

A history of Yaws only. Shows a quite extensive ulceration with bone infection and sequestrum formation.

Contrast the two. Note the limited local reaction in tissues not otherwise debilitated of quite a large lesion - this of course being characteristic of spirochaetae lesions generally but even of pyogenic conditions in African natives.

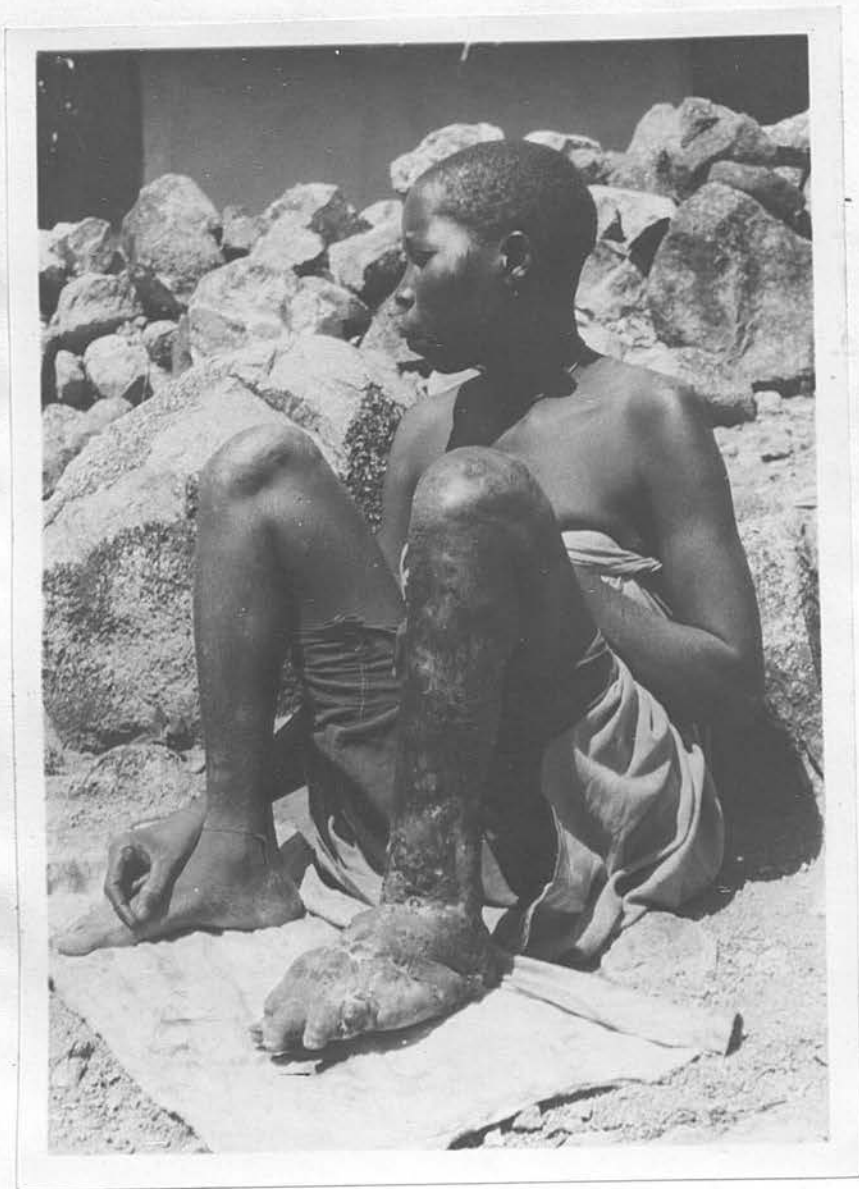
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YAWS AND FILARIASIS.960 Mamma Tamasha binti Ramazani.

Yaws in childhood. Not a congenital and no evidence of acquired disease. Smallpox also and elephantiasis of both legs in adult life. When this had persisted 3 years the legs and feet began to ulcerate - this was quite superficial - there was no loss of tissue nor implication of bone.







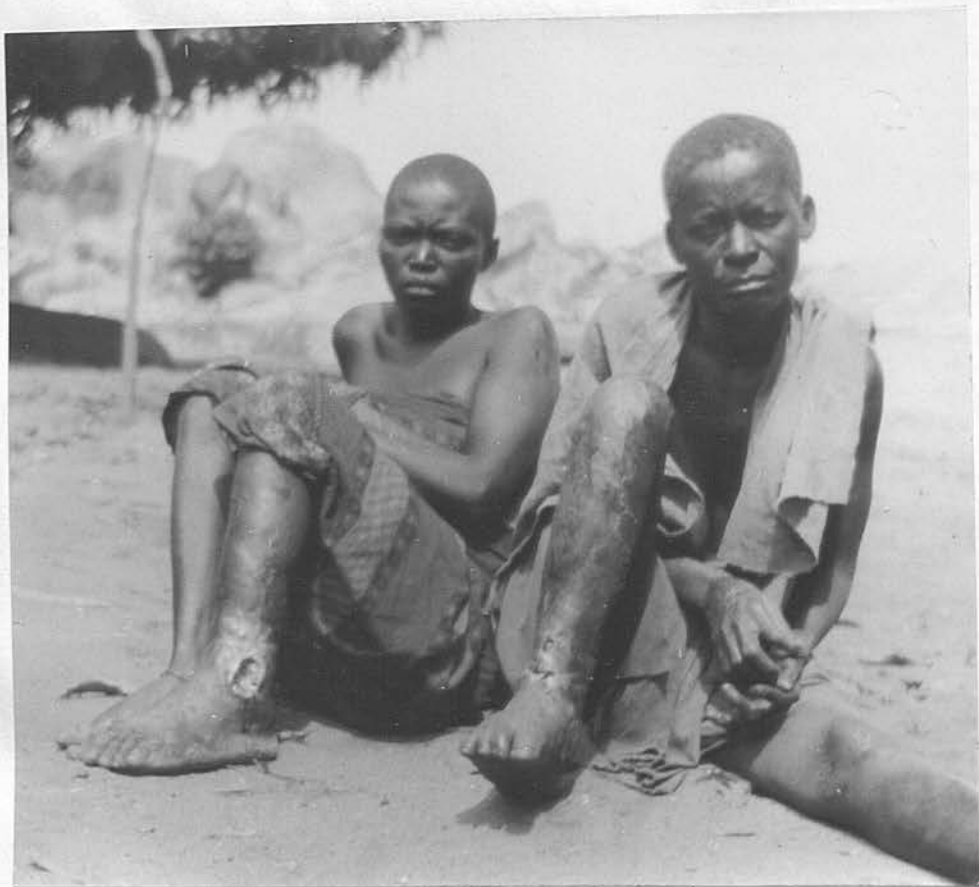
961

SYPHILIS AND FILARIASIS.961 Myaiya binti Kanijika.

Says Syphilis acquired innocently as an infant. She has ragades about the lips and saddle-nose. Denies Yaws. The leg and foot are covered with dense scars adherent to the bone which itself is greatly enlarged.

Compare Nos. 960 and 961 with No.206 preceeding and note the predilection of both Yaws and Syphilis for tissues already damaged - in this case by true Elephantiasis. In contrasting them note again the difference in degree of ulceration and fibrous tissue reaction presented by Yaws and Syphilis. See previous note on No.1845.

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192

190

CONGENITAL SYPHILIS AND ELEPHANTIASIS.190 Kate binti Hamsini.192 Wamilango binti Lolalama.

Two women with mild filarial Elephantiasis on which has occurred a diffuse ulcerative condition presumably due to Congenital Syphilis - Yaws being denied.

Up to a point great improvement was effected by S.B.T. and Bicroel.

The difficulty of dealing with these ulcers is apparent when one considers the chronic veinous and lymphatic stasis of the tissues in which they lie - surrounded as they are by dense scars which deprive them of blood and any drugs introduced therein - which strangle the nerve supply and render them intolerant of even the milder antiseptics and when one considers the element of food deficiency which is always present.

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1541

YAWS OR SYPHILIS IN A LEPER.1541 Karavia bin Kanewya.

A case of nerve Leprosy, from a Syphilitic area. On admission he was in a miserable state - emaciated, presenting large bulbous trophic ulcerations on arms and legs and mentally deficient. From previous experience of these cases he was treated with Karsulfan, Bicrool and Sod. Bismuth Tartrate on the assumption that Yaws or Congenital Syphilis was for the moment predominant - and with quite remarkable results. The sores healed (the white patches in the photo) - he put on weight - actually getting fat, and from being wild and destructive he became quite genial and contented.

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1316

A CASE OF MULTIPLE INFECTION.1316 Lucia binti Inlaba.

Female child - Congenital Syphilitic who had contracted Yaws and Leprosy. When seen she had active ankylostomiasis presumably malaria and a mild periostitis of the shins. The leprosy was clinically cured - the maculae were almost resolved and only the telltale skin discolourations remained - one such patch can be seen above the L. costal margin. What part the multiple infection had played in this early arrest of the leprotic disease is difficult to say.

1347 Lioho binti Kamiolo.

Yaws in childhood and had acquired Syphilis. The backs of the hands were depigmented - the palms were "corroded" and the soles cracked.

1365 Kakuwankwa binti Karaka.

Yaws in childhood. A chronic leg ulcer at the 'site of election' - in process of healing under Karsulfan and Bicroel.



71a.



1365

1316

1347

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638

414

of yona

toerroc

ILLUSTRATING THE NECESSITY FOR DUAL THERAPY AND FOR  
THE CORRECTION OF THE FOOD DEFICIENCY FACTOR.

414 Mary bibti Inweli.

Yaws 10 years previously. Recurrences with superficial ulceration on neck, shoulder and breast (secondary mastitis and galactorrhoea). The patient was truculent and treatment therefore spasmodic but the ulceration persisted for 18 months when a florid secondary Yaw appeared on the forehead.

638 Kanyapa binti Kiputa.

Yaws in childhood - recently a diffuse gummatous infiltration of the periosteum of the tibia which had broken through the soft parts and exposed the bone. This also resisted treatment by Sodium Bismuth Tart-rate for 18 months.

Both cases were eventually cleared up under dual therapy (Intramuscular "Karsulfan" and metallic Bismuth ("Bicreol") with the addition of a liberal meat diet to correct the food deficiency factor.

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196

211.



ATYPICAL CASES.196 Bibiama binti Pelembe.

Chronic ulcer dorsum hand - 2 years duration and resisting all specific treatment for a year. Yaws and Syphilis denied.

211 Edwana binti Mawula.

Yaws in childhood. Recurring ulceration of R. nipple and breast.

Yaws ulcerations of vascular soft parts are usually extremely amenable to specific remedies.

In the first case I had concluded the ulcer was becoming malignant (as these chronic ulcerations occasionally do) when it cleared up spontaneously - leishmaniasis was excluded and it had not a "diphtheritic" look.

In the second the region implicated is one of the most difficult to heal in African women. There is usually associated mastitis and often galactorrhoea and the pendulous nature of the breasts added to the habit of supporting the clothes in front and children behind slung across the chest cause repeated recurrences. Ultimately sound healing was obtained by Karsulfan I.M.



1025.

207

SURGICAL CASES.207 Nantin binti Uyaka.1025 Nangalle binti Saidi.

Yaws in childhood - no history of Syphilis.

These lesions show the result of local and diffuse gummatous infiltration of periosteum etc. leading to death and necrosis of bone. In 207 the sequestrum is visible. In the other which is obscured by native remedies multiple sinuses lead through the cloacae of the greatly enlarged tibial case to the sequestrum inside. Treatment of course surgical - sequestrectomy being followed by rapid healing.

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