F R A M B O E S I A

A N D

S Y P H I L I S.

A Thesis for the M.D. Degree

presented by

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FRAMBOESIA and SYPHILIS.

Since the discovery of Dioxy-Diamino-Arsenbenzol and its preparations by Ehrlich and the application of these drugs in Spirochaete Infections, the interest at present taken exceeds by far anything it has hitherto attained.

Framboesia or Yaws is a Tropical General Disease resulting from the infection of an abraded surface by a specific organism, the Treponema Pertennue, and characterised by a peculiar papillomatus eruption specific to the disease itself.

Its synonyms are many, the most important being known as Yaws in the British Colonies, Pian in the French, Parangi in Ceylon, Byba in Zanzibar, and Lupani in Samoa.

It is to be found in all the West African Colonies from Gambia to the Congo, and from the Maritime line as far as to Timbuctoo.

Papilloma Tropicum has an ancient history, for if we are to believe Hume and Adams it was the disease that afflicted the Israelites during their emigration from Egypt and that therefore, the disease referred to in the thirteenth chapter of Leviticus does not mean Leprosy as usually translated; but Yaws.

Oviedo Valdez, 1478-1557, describes it in his work, "Historia De Las Indias".

Again in the year 1694 a peculiar disease occurred in

Scotland, called Sibens, imported by the soldiers of Cromwell and maintained by many to have been Framboesia; but in all probability it was Syphilis.

Sir Jonathan Hutchinson was at one time of the opinion that Framboesia was a form of Syphilis; but in later years he was convinced that Framboesia and Syphilis were two distinct entities.

Although Framboesia is essentially the same in all tropical countries in which it occurs, this treatise is confined to the disease as seen and treated in the West African Colonies and is the outcome of observation and investigation of innumerable cases and their Yaw histories.

During the period of the Dutch in West Africa, outbreaks of Framboesia were frequent in the crowded ships carrying slaves to America.

On the coast of West Africa the disease is to be met with from Gambia to the Congo and from the Coast line as far inland as Timbuctoo.

The disease is less prevalent on the Coast line, due no doubt to the fact that here the natives are in areas within sanitary control and where their environment is undoubtedly superior.

That dirt and insanitary conditions are a suitable nidus for the development and dissemination of the disease is now a

proved certainty.

The writer has very occasionally seen a case of Framboesia occur in the more educated native and so far never in a European.

Such an infection is now rarely ever seen in the well-disciplined forces of the Native Police or Regiments, due to education in cleanliness and routine inspection of huts and barracks.

Age nor sex have no bearing on the disease, though it is more frequently met with in children.

In Kluto Hospital, Togoland, in 1915, there were treated 338 Cases of Framboesia -- 177 Males and 161 Females. Of that total 75 per cent. were children.

During the last nine months of 1916 one hundred and thirty two cases were treated with Salvarsan or Neosalvarsan.

The greater per centage of cases treated were in juveniles and all were natives of the poorer class who live crowded together in mud huts.

Cleanliness in the best of African mud huts is conspicuous by its absence and a small wood fire in the interior of such dwellings adds to the already vitiated atmosphere.

Ants and blood sucking Muscidae are to be found without exception, while the greater proportion of natives harbour the various pediculi.

The mode of infection is by direct contagion and probable

dissemination by Insectae.

The prevalence of this granulomatous disease on the "Coast" will be noted from the following statistics.

Colony	Year	No. of Cases.	Cases Treated.
Sierra Leone.	1915	133	133.
Gold Coast	1914	614	614.
Gold Coast	1915	529	529.
Kluto, Togoland	1915	338	338.
Kluto, Togoland	1916	132	132.

SYMTOMATOLOGY:-

Framboesia like Syphilis may be divided into three stages.

(1) Primary.

(2) Secondary.

(3) Tertiary.

The stages are purely transitional and all may be got at the one time in an infected subject.

Like all infections this tropical disease has its period of incubation which represents the interval that elapses between the occurrence of infection and the appearance of the primary lesion at the site of inoculation.

The incubation period is variable; but nineteen days was found to be the period in a black Colobus monkey belonging to the author who inoculated the animal on the nasal ali.

The mode of infection is through an abraded surface, a small cut or where the native has scratched himself.

Premonitory symptoms met with during the incubation period are malaise, headache and occasionally anorexia with an irregular temperature.

Throughout this period and almost always throughout the whole course of the disease the patient is quite able to go about and perform his duties of labour.

At the termination of this period there appears at the site of inoculation a minute papule, or often a number of

budding papules round a large central one.

This is the Primary Lesion.

The lesion has no induration and the patient complains of the sore itching.

The sore to begin with thus differs from the primary lesion of Syphilis.

In about six days' time the papule begins to weep and becomes covered with an ochre coloured crust, which if removed by accident or design, exposes a deep ulcer with clean cut edges and healthy granulations sprouting from the base.

If healing does not ensue the papule becomes a granuloma.

As is generally the case due to want of cleanliness pyogenic infection supervenes and the granuloma becomes a foul fungating ulcer -- the Mother Yaw.

As Framboesia has often been mistaken for Syphilis and as many hold the view that it is a stage of Syphilis, it is convenient here to differentiate between the Primary Lesion of Framboesia and that of Syphilis.

	Primary Lesion of Yaws.		Primary Lesion of Syphilis.
a.	Never indurated.	a.	Induration.
b.	No Pain.	b.	Occasional Pain.
c.	Nearest glands affected.	c.	Enlarged glands not confined to proximity of lesion.
d.	No throat lesion.	d.	Throat lesion common.

Primary Lesion of Yaws.	Primary Lesion of Syphilis.
e. Itching of lesion.	e. Absence of Itching.
f. Lesion extragenital.	f. Lesion adgenital.
g. May appear in any part of the body.	

STATISTICS OF INCIDENCE OF PRIMARY LESION:-

The site most common for the primary lesion is just above the ankle or on the forearm.

In the female the primary lesion apart from the ankle is more frequently found on the waist hip line and breasts.

Lesions on the former usually occur due to the children and mothers carrying infants infected astride, and the latter from lesions about the mouth of a suckling child.

Males. 177 Cases.		Females. 161 Cases.	
Knee to Ankle	57	Knee to Ankle	40
Forearm	31	Hips	33
Foot and Toes	27	Waist	29
Gluteal Region	22	Breasts	20
Knee	12	Thorax (minus Breast)	10.
Thigh	9	Foot and Toes	9
Thorax	8	Arm	7
Arm	6	Knee	7
Face	5	Thigh	4
		Face	2

Thus, the Primary lesion in Framboesia is almost always extragenital, while the chancre in Syphilis is mainly adgenital.

This primary papule may disappear naturally before the appearance of the general eruption; but almost without exception it is present throughout the second stage.

The author has seen many cases where the secondary eruption has undergone a process of involution, the initial lesion alone remaining.

At a later stage in this article Framboesia and Syphilis are dealt with and the differential diagnosis discussed from the Clinical, Biological and experimental aspects.

SECOND STAGE OF FRAMBOESIA.

This second stage appears in about forty days after the initial lesion.

The period of appearance is, however, most inconstant. Cases under my observation have developed the secondary eruption as early as forty days and as late as sixty-seven.

The eruption is of the papulose type, the papules being small in size and soon taking on a crust resembling that of the primary yaw.

In my experience the eruption usually covers the greater part of the body with the exception of the mucous membranes and scalp.

In two cases to my knowledge the scalp was involved on

the low occipital region where the hair was somewhat scanty.

There are few symptoms apart from these of the primary stage with the exception that deep seated muscle and bone pains predominate, so much so that apart from the eruption one would diagnose pains of rheumatic origin.

The papules may die by involution or more often develope into granulomata and as seen at a native dispensary, resemble skin subjected to the action of strong nitric acid.

Should the papules coalesce the tissue resembles a patch of wash leather.

Remove the crust and a semi-purulent secretion wells out and an ulcer with well defined margins and a granulating base is displayed.

When a native in the above stage visits the outdoor department for the first time these granulomata are usually infected with pyogenic bacteria and the patient almost invariably has placed over the sores unginned cotton wool which has usually remained unchanged for weeks.

Others again have the lesions covered with pieces of banana leaves bandaged on with bamboo "tie-tie".

In the former cases an accompanying cellulitis or abscess formation is common, in the latter due to the waterproof nature of the leaf the Crust of the lesion has become detached and a granulating ulcer is seen.

The patient more remote from civilisation has usually his lesions plastered with cow manure or mud and rarely one finds in this type of patient tetanus, although I feel certain that many succumb to such in their remote villages.

The granulomata may vary in size from that of a pea to that of a good sized apple, the latter size usually due to coalescence of several papules. Occasionally a process of hyperkeratosis may develope and the patient has the appearance of being covered over with warts. These warty excrescences may persist indefinitely or suddenly contract and disappear leaving behind dark areolae.

TERTIARY FRAMBOESIA:-

Many deny that a Tertiary stage in Framboesia does exist, and no doubt that belief is based on the fact that it is almost impossible to follow cases in particular throughout the stages on account of the indefinite course of protraction in the second stage and that natives if they find no visible improvement in their condition either leave hospital of their own accord or ask permission to depart.

To retain patients for observation in a disease like Yaws visible improvement or amelioration of their condition must be assured or it is futile to endeavour to retain them.

The author in order to retain the patients, whose photographs are in this treatise, for observation, had not only to hold out to them some guarantee of success in treatment; but to supply their daily wants in food and in many cases to maintain the relatives or village followers who accompanied them.

In spite of these inducements many were at hospital the one day, and had set out on the morrow to "trek" to their remote villages.

These facts are, I am convinced, the reason why Framboesia by many is not associated with a tertiary stage.

I am certain, however, that a tertiary stage does exist in which there is destruction involving muscle and bone.

Such has been described by Castellani.

Many of the investigators who deny that a tertiary stage does exist must have seen muscle and bone ulcerations in native tribes; but lack of facility to speak the native language and the difficulty of recording histories are I am certain the reasons why they are unable to correlate a past illness, probably in infancy, as a Yaw infection.

There are numerous cases in my experience in West Africa where there were well marked chronic Periostitis of the Tibiae, and two cases to my knowledge having deformity of such, where the past histories undoubtedly pointed to Framboesia infection in youth.

The two cases had very faint pigmentation over the body and cicatricial markings where there had been ulcers.

From the description of the disease producing these and the absence of a history of specific infection or injuries there can be little doubt that there was a Framboesia infection earlier in life and that the manifestations above described represent the disease in the Tertiary stage.

A painful affection of the feet commonly met with in the African native the writer classes as Yaws in the Tertiary stage.

In about 35 per cent. of cases seen in my sojourn on the "Coast" the feet were attacked, there being present deep pitting of the epidermis of the soles of the feet, producing a worm eaten appearance.

This condition is frequently met with in patients who have not only the secondary eruption; but even the presence of the mother Yaw.

Again, this peculiar gravel rash pitting of the feet is to be met with in subjects who have neither the presence of the Primary or Secondary stages; but whose histories on investigation lead one to believe that there was Yaw infection.

When there is an absence of other manifestations of the disease my opinion is that this is solely due to the disease having undefgone a process of involution.

In large Carrier Camps when the feet of the porters are examined a very large perventage of them are found to have this painful condition.

In the Togoland and Kamerun Campaigns Framboesia of the feet played cruel havoc with the Carriers, and to a very minor extent, the native troops.

Frequently the disease in this stage is associated with so much pain that the native, if a carrier, is incapacitated for work.

THE TWO SPIROCHAETAL DISEASES:-

At a cursory glance Framboesia, incertain stages, especially if there happens to be a lesion on the genitalia, may be mistaken for Syphilis; but on close observation and with wide experience it will be found to be quite distinct clinically and biologically.

Many based their opinions that Framboesia was a form of Specific disease only modified in its characteristics by clime, race, or epidemiological circumstances.

One may from want of experience call Framboesia Syphilis; but they are two distinct entities.

Framboesia and Syphilis are seen daily in West African Colonies; but in the remote quasi military areas of the Northern Territories, at least in early occupation, Framboesia was rampant amongst tribes that were at that period untainted by the virus of Syphilis.

The more one sees of these two diseases the greater distinction is one led to draw between them.

In constant observation of the two infections, especially in Maritime areas where they abound, one meets with subjects infected with Framboesia having a syphilitic infection superimposed. Case II. PLATES. 2 and 2A.

To Medical Officers who have resided on the "Coast" for some time it is comparatively easy to make a differential

diagnosis by appearances alone.

To the inexperienced officer this seems absurd; but the facts have been borne out by biological and experimental evidence.

DIFFERENTIAL DIAGNOSIS OF FRAMBOESIA AND SYPHILIS.

	Framboesia.		Syphilis.
1.	A purely Tropical Disease	1.	A disease world wide.
2.	More frequently seen in Children.	2.	More frequently seen in Adults.
3.	Lesion almost always extragenital.	3.	Lesion mostly adgenital.
4.	Primary Sore has no induration	4.	Primary Sore indurated.
5.	Itching of Primary Sore	5.	No marked itching.
6.	Mother usually infected from child. Viz. Case 14. Plates 14 & 14a.	6.	Child usually infected through parent.
7.	Abortion almost unknown in pregnant women.	7.	Abortion a feature in infected pregnant women.
8.	Mucous Membranes, Scalp & Eyes never affected.	8.	Mucous Membranes, Scalp & eyes commonly affected.
9.	Nervous lesions most rare.	9.	Nervous lesions most common.
10.	A subject of Framboesia may have a syphilitic infection superimposed. viz.- Case 2, plates 2 and 2a.	10.	A subject of Syphilis may have Framboesia superimposed.
11.	Yaws auto-inoculable.	11.	Syphilis not auto-inoculable.
12.	Patients suffering from Yaws do not disseminate	12.	Disease disseminated by intercourse.

Framboesia.	Syphilis.
the disease by intercourse unless the disease affects the genitalia which is rare	
13. Offspring of Framboesia subjects free of taint.	13. Offspring tainted.
14. Colobus Monkey can be infected with virus of Framboesia	14. Colobus Monkey cannot be infected with virus of Syphilis.
15. Five Framboesia pregnant women under observation gave birth to full time healthy offspring, all growing up free of hereditary taint.	

CAUSATION AND AETIOLOGY OF FRAMBOESIA.

Framboesia is caused by a Spirochaete, the Treponema Pertennue, differing biologically from the virus of Syphilis.

THE · VIRUS · OF · FRAMBOESIA

PLATE · A

X 1000

TREPONEMA · PERTENNUE

THE · VIRUS · OF · FRAMBOESIA

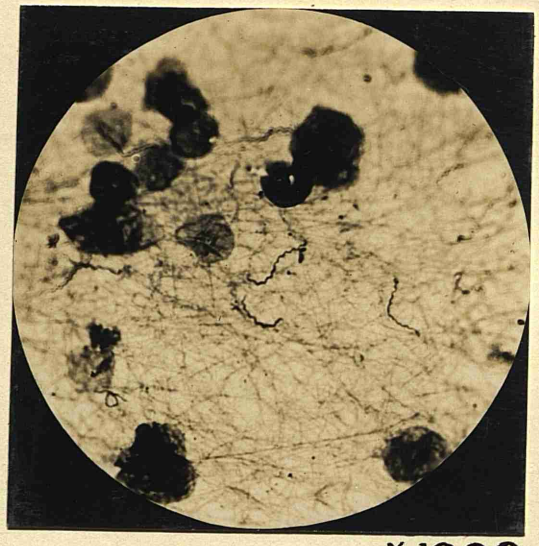
PLATE · B

X 1000

TREPONEMA · PERTENNUE

THE · VIRUS · OF · FRAMBOESIA

PLATE · C



X 1000

The TREPONEMA · PERTENNUE

CAUSATION AND AETIOLOGY OF FRAMBOESIA.

Histological Differences in Framboesia and Syphilis.

Framboesia.	Syphilis.
1. The Treponema Pertennue is only found in the Epidermis and absent from Nerve tissue.	1. The virus is found in the deeper tissues and nerve structures.
2. No fibrosis.	2. Constant fibrosis.
3. Absence of changes in blood vessels.	3. Changes in blood vessels a feature of the disease.
4. Absence of Necrotic changes. Viz. Plates D. & E.	4. Necrosis a feature of the disease.

SECTION · OF · YAW

SECONDARY · LESION

LOW · POWER

PLATE · D

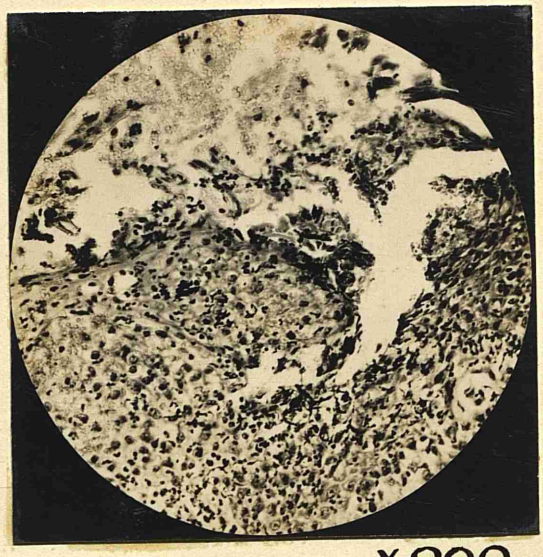
X 40

— A · FLATTENED · VESICLE · WHICH CHANGES · INTO · HONEY · YELLOW — PUSTULAR · ELEVATION

NOTE : CRUST · FORMATION; THICKENING OF · EPIDERMIS · WITH · DENSE · · · · INFILTRATION · OF · PLASMA · · · · · CELLS · BENEATH —

SECTION · OF · YAW
SECONDARY · LESION
HIGH · POWER

PLATE · E

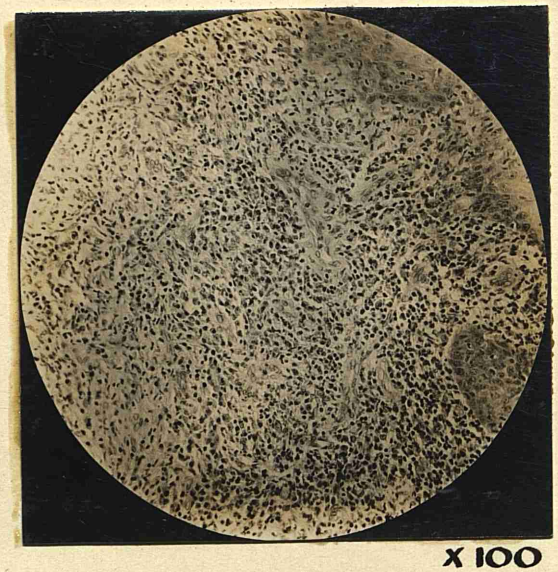


X 200

NOTE: CRUST · FORMATION · · · · · ·
DENSE · INFILTRATION · OF ·
PLASMA · CELLS · THINNED
WALLED · BLOOD · VESSELS ·
WITH · HÆMORRHAGE · · · · ·
SURROUNDING

SECTION OF CHANCRE

PLATE · F



X 100

NOTE: ROUND CELLS AND PLASMA CELL INFILTRATION AROUND BLOOD VESSELS

The VIRUS · OF · SYPHILIS

PLATE · F'

X 1000

THE · SPIROCHAETAE · PALLIDA

E X P E R I M E N T A L.

Experimental:-

The author has on many occasions produced:-

1. Auto-inoculation in Framboesia native subjects, an important factor, the antithesis of Syphilis.

2. Two black Colobus Monkeys belonging to the author were infected with the virus of Framboesia; but resisted infection from the virus of Syphilis after numerous attempts at inoculation.

CASES OF FRAMBOESIA WITH PHOTOGRAPHS BEFORE AND AFTER TREATMENT.

CASE 1.

Afua a juvenile female suffering from Yaws first attended hospital as an outdoor patient in the latter months of 1916.

Her bodily condition could best be described as filthy. With the exception of the Scalp and Mucous Membranes the body was covered with the papulose lesions of the second stage and these from neglect were infected with pyogenic bacteria.

The mother was instructed to wash the child and in order to induce invalid feeding she was given several tins of milk and arrowroot.

A purge was given and after physical examination the urine was examined.

Temperature was 99.4 F. and Urine was normal.

The patient complained of malaise and epigastric pain, was listless in appearance and constantly scratching the skin.

On the second day of attendance the patient was prepared for treatment.

The left arm was thoroughly cleansed and after painting with iodine a tourniquet applied over the upper arm.

Neosalvarsan prepared as described in the treatment of Yaws was given by the intravenous method.

The dosage here administered was 0.3 grms., and the patient instructed to appear daily.

CASE 1. (contd.)

Plate 1. shows the case before commencement of treatment.

The only reaction was a slight rise in temperature on the second and third day.

Three days following the injection the papules took on a dry scaly appearance and began to contract from the periphery inwards and finally disappear leaving pigmented areas behind.

Plate 1a. shows the disappearance of the papules nine days after the injection.

CASE · 1

PLATE · 1

BEFORE TREATMENT

PLATE · 1A

9 · DAYS · AFTER · · · INJECTION · OF · · 0·3 GRAMS · OF · · NEOSALVARSAN INTRAVENOUSLY

HISTORY:-

Little information could be obtained from the mother except that she was certain that Afua had this papulose eruption for the last four months and had an initial sore six months ago on the right lower extremity.

She attributed the initial lesion to a sting from a scorpion.

There was no evidence here of the primary Yaw; but the secondary eruption was well marked and distributed.

Since the disappearance of the general eruption the patient has been brighter looking and seems to have the appearance of enjoying life, a feature generally absent in those who are extensively covered with the eruption.

Three and a half months after commencement of treatment all manifestations of the disease had completely disappeared.

CASE 2.

Jatto a male of about 42 years of age first attended hospital about the middle of December, 1916.

He was suffering from Framboesia; but his chief complaint and reason for coming to hospital was that he was suffering from a sore on the penis.

His case is most interesting as he was suffering from Framboesia and acquired Syphilis.

HISTORY:-

About the beginning of September, 1916, a small papule was noticed above the left knee.

Little attention was taken of this until it increased in size and was covered with a yellowish coloured crust.

Soon after this another papule similar in appearance was noticed on the left forearm, which like the one on the lower extremity, began to enlarge and encrust.

Native medicine was resorted to without any amelioration of the disease.

In the second week of October (five weeks following the initial lesion) small papulae appeared on the right upper extremity and pectoral region.

At this period of the disease he suffered from malaise and frequent headache.

The penile sore made its appearance in the last week of

Case 2 (contd.)

November.

This lesion clinically was totally different from any other framboetic sore, being indurated and having all the characteristics of a hard chancre.

The exact date of having been exposed to syphilitic infection was impossible to determine as he had frequent intercourse with native women.

The important factor around which interest lies is the fact that while suffering from Framboesia he had the misfortune to acquire Syphilis.

PLATE 2

Shows the Mother Yaw just above the left knee and a coalescence of papules on the left forearm.

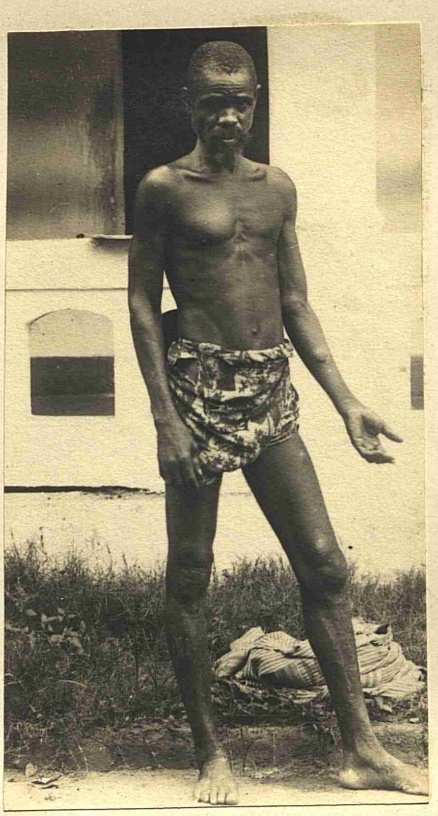
The general eruption is to be seen on the right upper extremity extending on to the pectoral area.

THE LESIONS:-

The Framboesia lesions were characteristic of the disease; but it is worthy of note that there was no induration as found on the penile lesion.

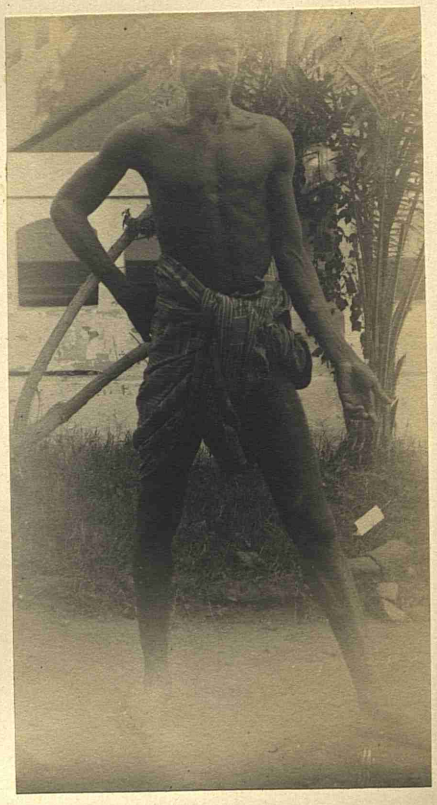
CASE II

PLATE · 2



BEFORE · TREATMENT
SHOWS · MOTHER · YAW · ABOVE
THE · LEFT · KNEE · COALESENCE
OF · PAPULES · ON · LEFT · FORE-
ARM · GENERAL · ERUPTION
ON · RIGHT · UPPER · EXTREMITY
AND · PECTORAL · REGION

PLATE 2A



SHOWS · RAPID · DIMINUTION
IN · SIZE · OF · FRAMBOESIA
LESIONS · DUE · TO · INTRAVENOUS
INJECTION · OF · 0 · 75 GRAMS
OF · NEOSALVARSAN
PHOTO · TAKEN · 9 · DAYS
AFTER · INJECTION

TREATMENT:-

Neosalvarsan was the drug employed and carried out as described in the treatment of Yaws.

The initial dose given intravenously was 0.75 grms.

There was no reaction whatever in this case with the exception of increased salivation.

PLATE 2a.

Taken nine days after the initial injection shows the disappearance of the papules on the arm and pectoral region with diminution in size of the lesions on leg and forearm.

In fourteen days from commencement of treatment all external manifestations of the disease had completely disappeared.

The chancre was more prone to heal, only disappearing after twenty-one days from the date of treatment.

Four months later the patient was enjoying good health, all manifestations of the two spirochaetal diseases having vanished.

CASE 3.

Yan, an intelligent boy of seven years of age and the subject of Framboesia came under my observation on 12th December, 1916.

The disease presented the typical appearance of Yaws in the stage of general eruption.

HISTORY:-

The initial lesion made its appearance on the outer aspect of the right lower extremity just above the ankle.

The only history obtainable was the site of the initial lesion and that the present condition had persisted for nine months.

EXAMINATION:-

The papules were more markedly developed on the forehead and lower extremities.

A few sparsely scattered papules marked the trunk.

The right ankle, the site of the initial lesion, had a deep fungating ulcer and presented the appearance of the mother Yaw.

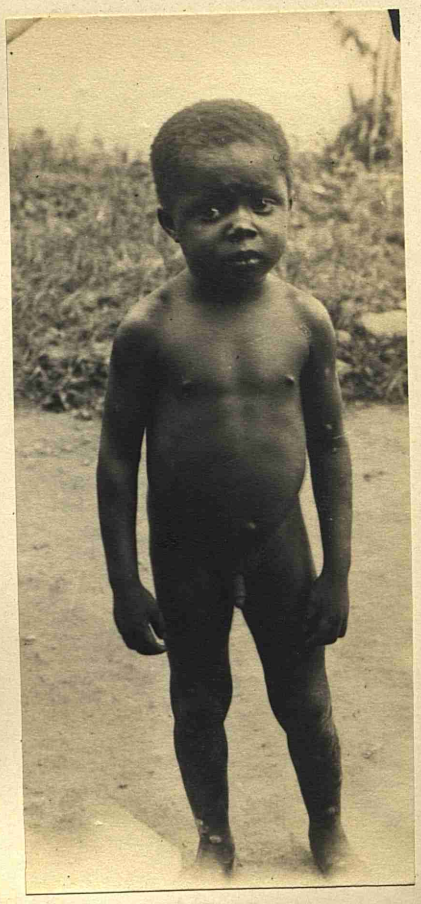
The only complaint volunteered was that of "Bellyache", which later was discovered to be due to Ascarides in the Alimentary tract.

CASE III

PLATE · 3

BEFORE · TREATMENT

PLATE · 3A



9 · DAYS · AFTER · · · ·
INJECTION · OF · 0·3
GRAMS · OF · · · · · · ·
NEOSALVARSAN · · ·
INTRAVENOUSLY · · ·

CASE 3 (contd.)

TREATMENT:-

Following the usual preliminary treatment Neosalvarsan for an initial dose 0.3 grms. was given intravenously.

There was a marked reaction here, the temperature rising within twelve hours to 100.5° F., and the child looking ill.

Following a purge and treatment with Phenacetin and Quinine the condition was normal the following morning.

PLATE 3 shows the papulose eruption.

PLATE 3a taken nine days after initial injection shows how rapidly the general eruption disappeared, an odd papule alone persisting, and the fungating ulcer showing signs of rapidly healing.

Treatment was persisted in and three months later all manifestations of Yaw infection had completely disappeared.

CASE 4.

Komla, a native of Togoland, first came under my notice in December, 1916.

He had suffered from Framboesia for six months; but had greatly improved six weeks prior to attending hospital.

The latter fact is interesting as history will bear out, showing that a process of involution in Yaws is not uncommon.

HISTORY:-

The initial lesion started on the inner side of the right thigh about three inches below the groin.

To commence with, it was minute in size but latterly had increased in size.

Nine weeks later the body was covered with a papulose eruption which had gradually disappeared within the last six weeks, only a few papules remaining, one on the left shoulder, forehead, and two on the abdomen and thighs.

EXAMINATION:-

There were two well developed elevated papules the size of an almond on the inner aspects of each thigh.

Encrustation and pyogenic infection of these lesions had occurred.

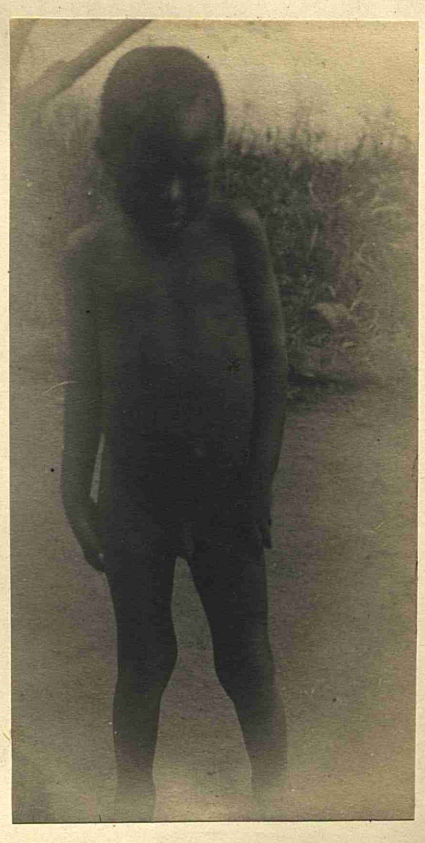
The four remaining papules, two on the abdomen, one on the forehead and another on the right shoulder, showed distinct signs of decreasing, for slightly outside each papule was a small pigmented area over which the lesion had previously

CASE IV
CONTD.

PLATE · 4

BEFORE · TREATMENT

PLATE · 4A



9 · DAYS · AFTER · INJECTION · OF 0·3 GRAMS · OF NEOSALVARSAN INTRAVENOUSLY

Case 4 (contd.)

extended.

There was distinct pigmentation cafe au lait colour above the ankles where once these areas had been covered with the eruption.

The papule on the upper part of the left thigh I am certain arose from auto-inoculation from the infective Yaw on a similar position on the other limb.

PLATE 4

Shows the initial lesion on the right thigh and its progeny, the result of auto-inoculation on the corresponding site of the other extremity.

PLATE 4a

taken nine days after treatment shows the almost complete disappearance of the papules.

TREATMENT:-

Neosalvarsan 0.3 grms. was administered intravenously with no reaction and thereafter treatment persisted in as described in "A Standard Treatment of Framboesia".

Four months later the patient had completely recovered.

CASE 5.

Kodjo, about twelve years of age and by no means an intelligent youth, was first seen in the latter part of December, 1916.

As he was unable to give any history concerning his condition the mother was asked to attend.

The history elicited from the parent is as follows:-

HISTORY:-

About five months ago the boy developed a small ulcer on the left knee and at a later date the face and upper part of the trunk became covered with a disease.

The parents who belonged to the poor type of native attributed this latter condition to a "ju-ju" worked by a man with whom the male parent had quarrelled.

This is not surprising for "ju-ju" and fetish play an important role in the daily life of the natives.

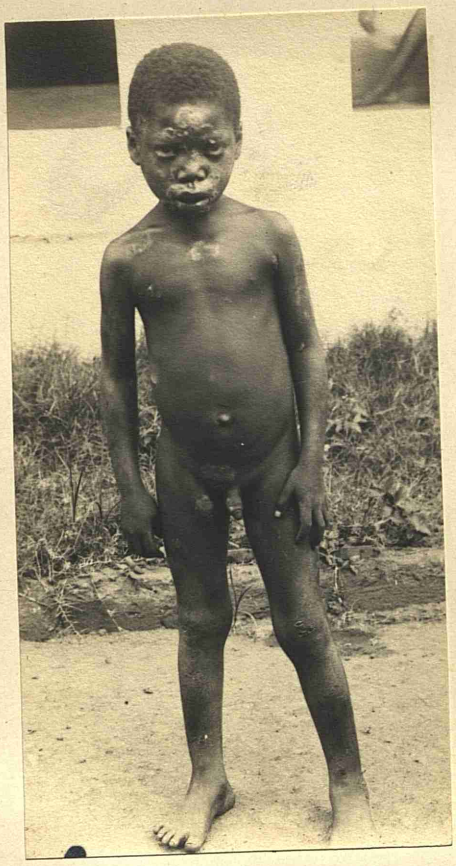
EXAMINATION:-

The diagnosis is one of Frambodsia in the stage of general eruption, the lesions being present on the face, chest, and right thigh, the latter sore due to neglect having become a large fungating ulcer.

There was also a penile lesion; but situation is important for it affected the foreskin and edge of the Corona only on the lateral aspect nearest the fungating ulcer of right thigh.

CASE · V

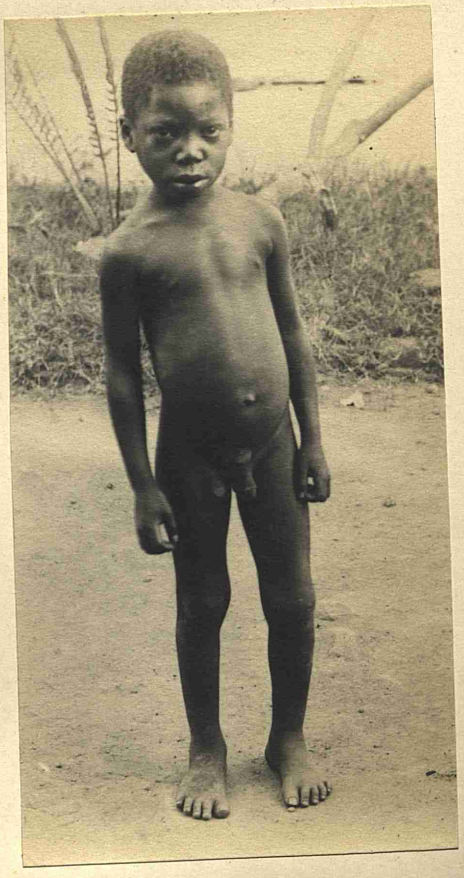
PLATE · 5



BEFORE · TREATMENT

NOTE FUNGATING · ULCER · · OF · RIGHT · THIGH · AND LESIONS · OF · PENIS · · · AND · PUBES · DUE · TO · AUTO - INOCULATION ·

PLATE · 5A



9 · DAYS · AFTER · INTRAVENOUS INJECTION · OF · 0 · 3 GRAMS OF · NEOSALVARSAN

NOTE SLOW · HEALING · OF · · " ULCERATIVE · LESIONS · ON · THIGH · AND · PUBES AND · RAPID · DISAPPEAR- ANCE · OF · SIMPLE · · · · FRAMBOESIA · LESIONS

Case 5(contd.)

As the penile lesion appeared at a later date than the limb lesion there can be little doubt that here again the penile lesion was the result of infection from the lesion on the thigh.

PLATE 5

Shows the eruption stage of Framboesia, the initial lesion on the left knee, the fungating ulcer of the right thigh, and the auto-inoculative sore of the penis.

Another lesion, probably the result of auto-inoculation, is to be found on the pubic area.

TREATMENT:-

Neosalvarsan 0.3 grms. was given intravenously and treatment persisted in as later described under Framboesia and its Treatment.

PLATE 5a

Shows well the rapid healing of Framboesia lesions nine days after initial injection.

Note the lesion on the right thigh not yet healed on account of the type being a fungating ulcer the sequela of pyogenic infection.

Five months later the case could be regarded as cured.

CASE 6.

Yau, seven years of age, has suffered from yaws for eight months.

HISTORY:-

The disease first made its appearance on the left lower extremity above the ankle, and three months later the eruption covered the trunk and limbs.

A large ulcer of the left thigh at the apex of Scarpa's triangle remained after the general eruption had disappeared, the latter having undergone a process of involution.

EXAMINATION:-

The left ankle was covered with papules and in places these had coalesced forming an ulcer.

The ulcer on the left lower extremity at the base of Scarpa's triangle was a large elevated mass of unhealthy granulations.

TREATMENT:-

Neosalvarsan 0.45 grms. was given intravenously and standard treatment maintained.

PLATE 6

Shows the ulcerative conditions of the lesions.

PLATE 6a

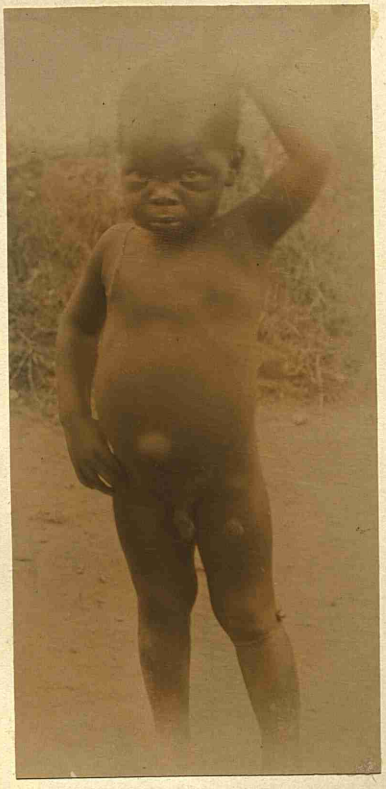
Shows diminution in size of ulcerative lesions. Photograph taken eight days after injection.

CASE · VI

PLATE · 6

BEFORE · TREATMENT
A · POOR · PHOTO
SHOWING · ULCERATIVE
LESIONS

PLATE · 6A



9 DAYS · AFTER · TREATMENT
SHOWING · DIMINUTION · · ·
IN · SIZE · OF · LESIONS ·

CASE 7.

Alta, a store messenger, first came under observation on December 12th, 1916.

HISTORY:-

The disease commenced five months previously in the form of a small papule on the left ankle.

Beyond dressing the sore with Iodoform purchased in the native market little attention was given to it.

About five weeks later the papule disappeared and in the fifteenth week from the occurrence of the initial lesion the trunk anteriorly and posteriorly became covered with the secondary eruption.

This intelligent messenger, quite familiar with the English language, knew that his affliction was Yaws.

As the station at which he attended is only a few days' march from the frontier of the Gold Coast and as emigration takes place in the Cocoa Season, there is little doubt that the name Yaws was introduced into the border territories of German Togoland from the British Colony.

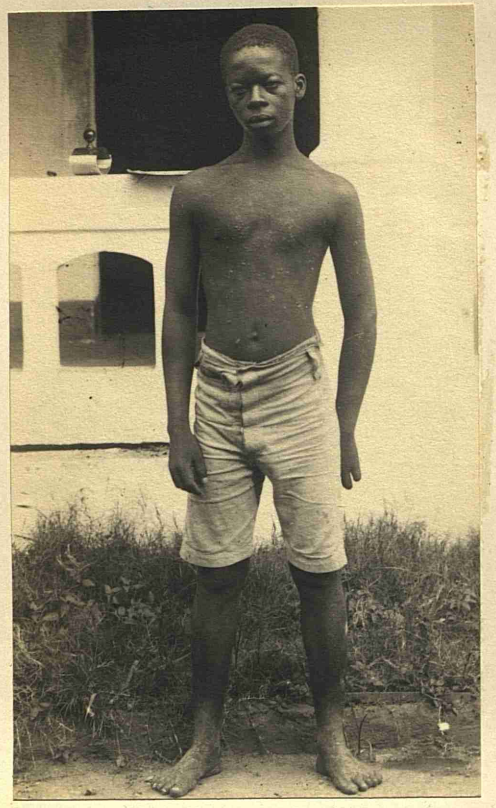
EXAMINATION:-

The initial lesion had completely disappeared, a small pigmented area alone remaining.

The papular eruption of an early second stage extended from the neck to the waist line both anteriorly and posteriorly.

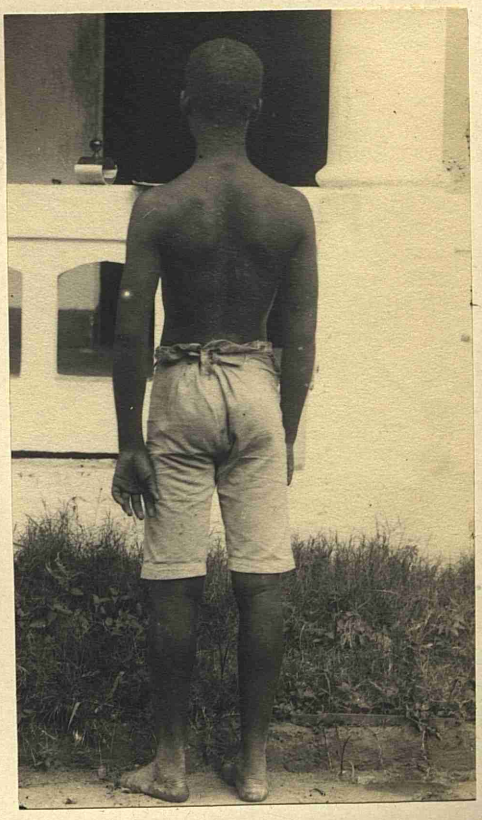
CASE · VII

PLATE · 7



ANTERIOR · ASPECT
SHOWING · GENERAL · ERUPTION

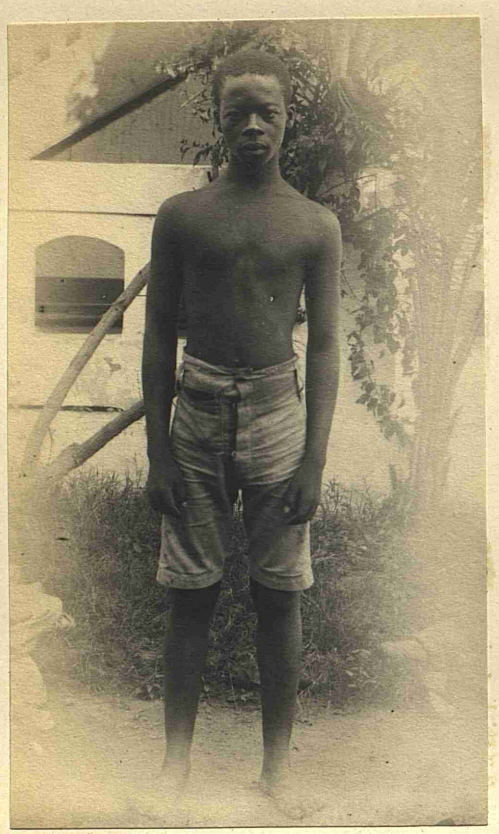
PLATE · 7A



POSTERIOR · ASPECT
SHOWING · GENERAL · ERUPTION

CASE · VII

PLATE · 8

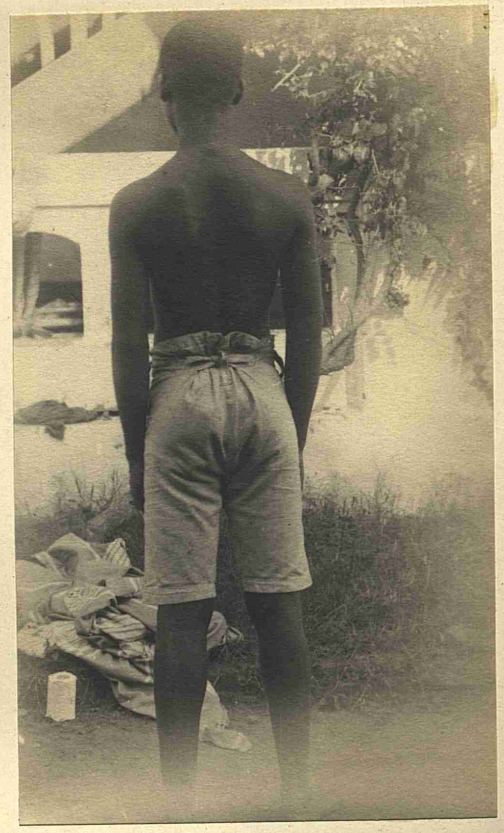


ANTERIOR · ASPECT

8 · DAYS · AFTER · INJECTION OF · 0·6 GRAMS. OF NEOSALVARSAN INTRAVENOUSLY

NOTE DISAPPEARANCE · OF · · PAPULES · AND · RE-PLACED PIGMENTATION

PLATE · 8A



POSTERIOR · ASPECT

8 DAYS · AFTER · INJECTION OF · 0·6 GRAMS · OF NEOSALVARSAN INTRAVENOUSLY

NOTE DISAPPEARANCE · OF · · PAPULES · AND · RE-PLACED PIGMENTATION

Case 7 (contd.)

TREATMENT:

0.6 grms.of Neosalvarsan was administered by the intravenous method and thereafter treatment continued as described in "Standard Treatment of Yaws".

Three months later there was no recurrence of Framboesia manifestations.

PLATES 7 & 7a

Show the early stage of general eruption.

PLATES 8 & 8a

Show the disappearance of the papules and their replacement by pigmented areas.

The latter plates were taken eight days after first injection.

CASE 9.

Anastase, a female who had suffered from Framboesia for two months, was brought to hospital on 13th December, 1916.

HISTORY:-

The initial lesion appeared on the calf of the right leg and was soon followed by a crop of pustules which coalescing formed a huge ulcer.

EXAMINATION:-

There was a huge ulcer on the calf of the right lower extremity. Yellow ochre encrustations were still adhering to the mass and here and there a semi purulent secretion welled out.

On removal of the encfustations a deep ulcer with pale unhealthy granulations was exposed to view.

Other papules of the general eruption covered the trunk and extremities.

The interval between the initial lesion and the appearance of the general eruption could not be stated.

The patient complained of severe pain in the calf of the right leg and definite tenderness could be elicited.

TREATMENT:-

Neosalvarsan 0.3 grms. was given intravenously and treatment persisted in.

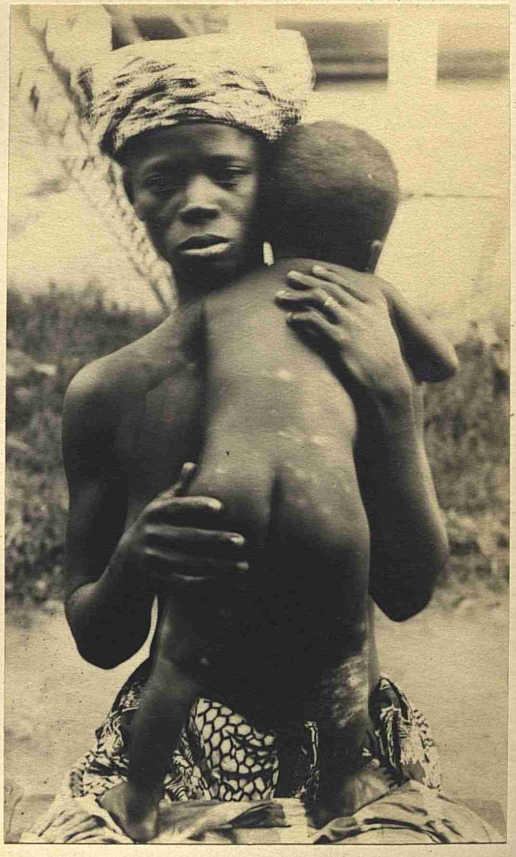
No further record of this patient was obtainable as she

CASE IX

PLATE · 9

BEFORE · TREATMENT
SHOWING · ERUPTION · AND ULCERATION · IN · RIGHT LOWER · EXTREMITY

PLATE · 9A



10 · DAYS · AFTER · INJECTION OF 0·3 · GRAMS · OF NEOSALVARSAN INTRAVENOUSLY

NOTE DISAPPEARING · PAPULES AND · HEALING · OF · ULCERATION · OF · LEG

Case 9 (contd.)

returned home and her whereabouts could not be discovered.

CASE 10.

Kwani first attended hospital in latter part of 1916.

HISTORY:-

The disease was of two months' duration and commenced as a small papule on the left lower extremity below the knee.

Following this initial lesion a small papule appeared in the fourth month on the right thigh and in the eighth month of the disease papules appeared on the forehead and breasts.

EXAMINATION:

The examination revealed a large fungating ulcer on the left lower extremity below the knee and a superficial serpiginous ulcer on the right thigh.

Two papules of recent origin were on the breasts and similar lesions on the forehead.

The child was well nourished and in good health.

TREATMENT:

The treatment in this case was as described under heading "Treatment".

To begin with an intravenous injection of 0.3 grms. of Neosalvarsan was given.

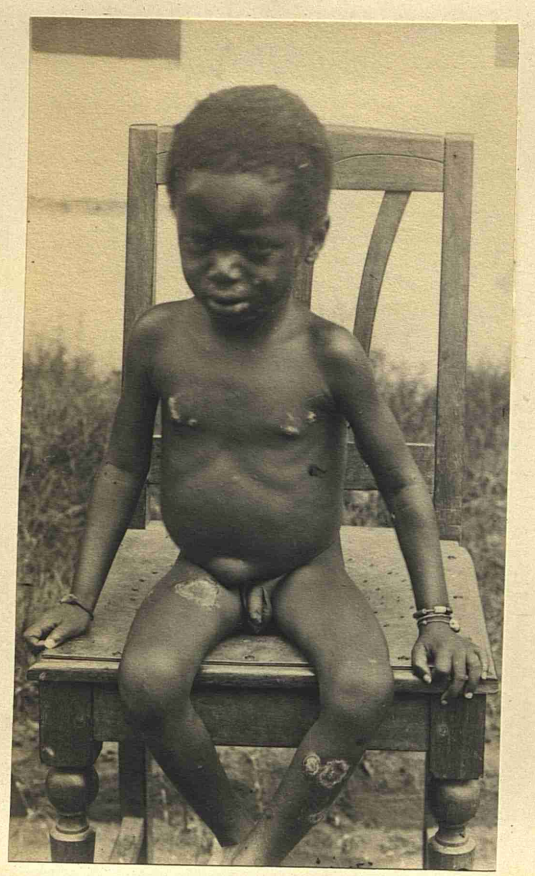
There was marked reaction in this case after the first injection, when the patient showed signs of loss of weight.

PLATE 10

Shows the ulcers and early papulose condition.

CASE X

PLATE · 10



NOTE PAPULES · ON · BREASTS AND · ULCERS · ON · THIGH RIGHT · AND · LEFT · LEG

PLATE · 10A

8 · DAYS · AFTER · INJECTION · OF 0·3 · GRAMS. NEOSALVARSAN INTRAVENOUSLY

DISAPPEARANCE · OF PAPULES · ON · BREASTS · AND FACE · AND · HEALING · STARTED IN · ULCERS

MARKED · LOSS · IN · WEIGHT · OF PATIENT

Case 10 (contd.)

PLATE 10a

Shows loss of weight, disappearance of papules and healing of ulcers.

Seen three and a half months later all symptoms had disappeared.

CASE · XI

PLATE II

NOTE: PENILE · LESION

PLATE · IIA

NOTE: ABSENCE · OF · PENILE · LESION 10 · DAYS · AFTER · INJECTION · OF · 0·3 GRAMS · NEOSALVARSAN INTRAVENOUSLY

CASE 11.

Kofie attended the Native Dispensary in December of 1916 for a Penile sore.

HISTORY:

About six months previously a small papule appeared on the foreskin of the Penis.

Little attention was given to this; but it was seen to enlarge and take on an ulcerative condition.

About seven weeks after the primary lesion the body was covered with a papulose eruption which persisted for two months and then gradually disappeared, the lesion on the Penis alone remaining.

EXAMINATION:-

The Penile lesion was confined to the foreskin and a pyogenic infection was superimposed.

Numerous pigmented spots were to be seen on the trunk and extremities.

PLATE 11

Shows the marked Penile sore.

PLATE 11a

Taken 10 days after injection of Neosalvarsan shows complete disappearance of lesion.

TREATMENT:-

An initial dose of 0.3 grms. Neosalvarsan intravenously was given; but on the twelfth day he disappeared and no further record of his condition was obtainable.

CASE 12.

Bajesi, a female portraying Framboesia in the stage of general eruption, is the most classical case of the infection I have so far come across.

The case is particularly interesting as the papules are seen here in several different varieties due to particular sites attacked.

HISTORY:-

Three months ago the child had occasional fever and following this a crop of pimples appeared on the forehead.

Previously the child had enjoyed good health with the exception of an ulcer on the right lower extremity below the knee which the mother stated was the sequel of a wound obtained by the child tramping "Swish" (soft mud for building purposes). The trunk and extremities were involved and recently the child complained of pain in the vulva.

EXAMINATION:-

The body in general was covered with papules of the second stage and pigmented areas where papules had previously existed.

The upper extremities showed papules of very recent origin while the eruption on the forehead was commencing to become serpiginous.

The angles of the mouth were attacked; but worthy to note the mucous membranes escaped.

Peculiar to relate the posterior aspect of the trunk was

Case 12 (contd.)

strikingly free.

The right lower extremity anteriorly was one extensive ulcerative mass with encrustations and there can be little doubt that in this area existed the initial lesion.

The vulva was attacked and the child complained of pain on and after micturition.

There were two well developed papules of a polypoid character with distinct pedicles arising from the right labia majora of the right side.

Due to want of cleanliness the pedicles of these polypoid growths showed minute ulcers.

This is the second occasion on which I have seen Framboesia papules take on a polypoid character and is of importance that the vulva was the site attacked in both cases.

I am of opinion that the polypoid character is a feature taken on where moisture exists and where there is friction or irritation as in the apposition of two surfaces of the Labiae.

TREATMENT:-

Following the preliminaries an initial intravenous injection of 0.45 grms. Neosalvarsan was given and treatment continued until six injections were administered.

Five months later the patient had completely recovered.

CASE · XII

PLATE · 12

NOTE! ULCERATION · OF · RIGHT · LOWER EXTREMITY · PAPULES · OF ARMS · AND BODY POLYPOID · CHARACTER · OF PAPULES · ENVOLVING · VULVA SERPIGINOUS · FORM · IN FOREHEAD

PLATE · 12 A

NOTE! MARKED · CONTRAST · TO PLATE · 12 — THE · RESULT · OF ONE · INJECTION · INTRAVENOUSLY · OF · 0·45 GRAMS · OF NEOSALVARSAN ——

A · PLATE · TAKEN · 8 DAYS · AFTER · INJECTION

Case 12 (contd.)

PLATE 12

Shows the appearance of the general eruption, the serpiginous character on the forehead and the polypoid features of the papules when the vulva is attacked.

The right lower extremity shows the extensive ulceration with encrustation and the thighs depict the pigmented areas where previously existed papulose lesions.

PLATE 12a

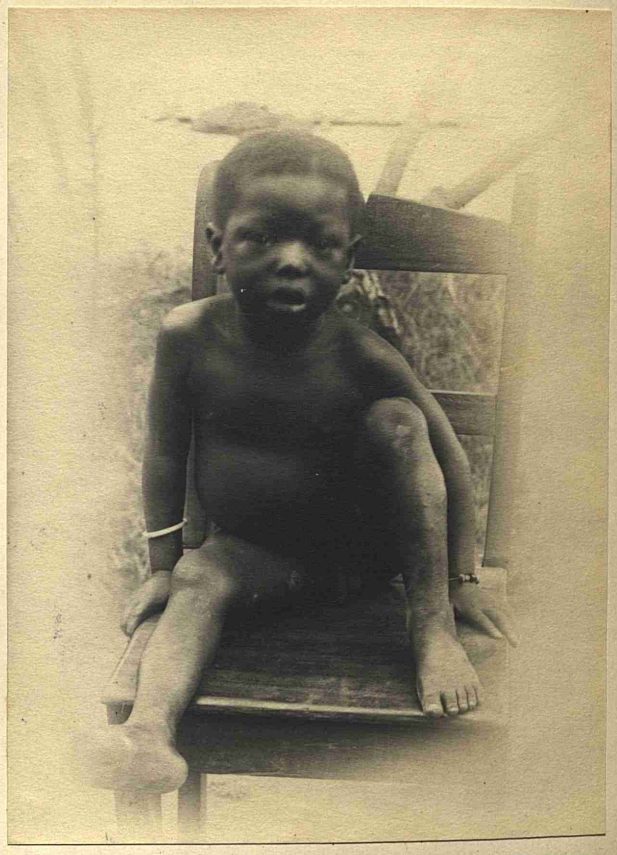
A marked contrast to Plate 12, taken eight days after the initial intravenous injection of Neosalvarsan 0.45 grms.

CASE XIII

PLATE · 13

NOTE: PIGMENTATION · OF · LOWER EXTREMITIES · AND · SPARCELY SCATTERED · PAPULES · ON ABDOMEN · AND · FACE

PLATE · 13A



NOTE: NINE · DAYS · AFTER · INJECTION OF · 0·3 · GRAMS. NEOSALVARSAN RAPID · DISAPPEARANCE OF · RASH

CASE 13.

Mensah, a boy of eight years, suffering from Yaw infection.

HISTORY:-

The boy had enjoyed good health up till two years ago when he had several ulcers in the left lower extremity; but what were their early appearances it was impossible to elicit.

For the last eleven months he had several successive crops of papules, some dying out, the remainder persisting and fresh lesions appearing.

EXAMINATION:-

Many old pigmented areas were visible on the anterior Tibial aspects and numerous sparsely scattered papules on the abdomen and face.

TREATMENT:-

Neosalvarsan 0.3 grms. was administered intravenously, but unfortunately the parent refused further treatment and departed with her son ten days after initial injection.

PLATE 13

Shows pigmentation of the lower limbs and sparsely scattered papules on the face and abdomen.

PLATE 13a

Shows the rapid disappearance of the papules nine days after first injection.

CASE 14.

This case includes two patients, Yawa, a mother infected from her child Kwaku.

CASE OF KWAKU THE CHILD:

HISTORY:-

In April, 1916, a small papule developed on the left upper arm and in a short time was followed by a crop in appearance similar to the initial lesion.

The papules coalesced and an ulcer formed which three months later disappeared to be followed soon after by a crop of similar lesions on the body and face.

Many papules died to be succeeded by others on various parts of the body.

EXAMINATION:-

The lesions presented the well marked appearances of the secondary eruption.

The left arm had areas of papules in ringworm formation and papules in a similar stage of eruption were to be found on the face and abdomen.

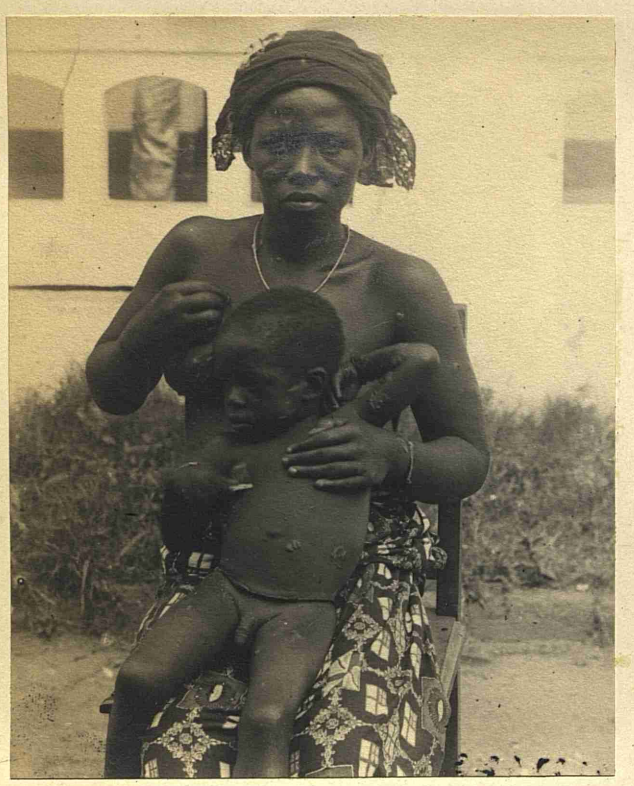
TREATMENT:-

Neosalvarsan 0.3 grms. was given intravenously and the child placed on standard treatment.

Unfortunately the child was removed home before further injections were administered; but it was reported two months

CASE XIV

PLATE · 14



NOTE: LESIONS · ON · UPPER LEFT · ARM · OF · CHILD FACE · AND · ABDOMEN

PLATE · 14A

NOTE: PAPILLOSE · ERUPTION ON · BREASTS · ARM · AND ABDOMEN

Case 14 (contd.)

later that the child had recovered.

PLATE 14

Shows the lesions on the left upper arm, abdomen and face.

PLATE 15

Shows the complete disappearance of the papules seven days after injection.

Yawa the parent infected from her child Kwaku.

The case of the mother is interesting for there can be little doubt that she was infected from the child.

HISTORY:-

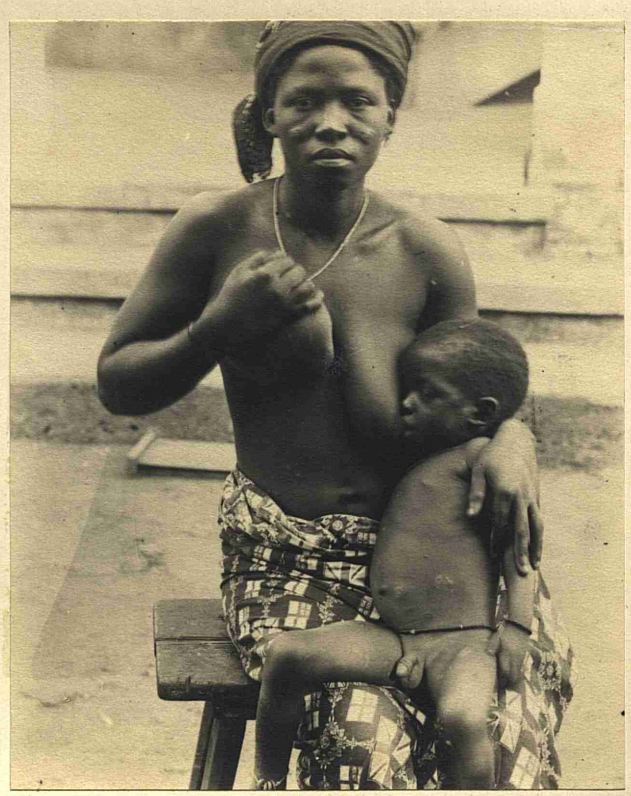
About the beginning of September, 1916, that is five months after the initial lesion on the child, she complained of itching of the under surfaces of the breasts and noticed what was described in native language small papules not unlike the lesion that results from vaccination.

This is the first occasion I have heard of the Yaw papule resembling the lesion that results from vaccination and even to the investigator the two lesions have often a striking similarity.

The child, like most African children, was breast fed and it is common for children of five and six years of age to still suckle the breast of the mother.

CASE XIV

PLATE · 15



NOTE: DISAPPEARANCE · OF PAPULES - SEVEN · DAYS AFTER · INJECTION · OF 0·6 GRAMS · NEOSALVARSAN INTRAVENOUSLY

Case 14 (contd.)

Within the last few weeks several lesions have appeared above the right clavicle.

The only complaint volunteered was that of disfiguration.

EXAMINATION:-

The mother was found to be suffering from typical Yaw lesions of the breasts, abdomen and neck.

The breasts in a mother who suckles her infant is a common site for Framboesia, the teeth of the child producing the necessary abrasion for the implantation of the Treponema.

TREATMENT:-

Neosalvarsan 0.6 grms. was administered intravenously. Two months later there was no relapse.

PLATES 14 & Y4a

Show the typical secondary lesions on the breasts, neck and abdomen.

PLATE 15

Taken seven days after injection shows complete disappearance of the Yaw lesions.

CASE 16.

Alta a patient suffering from Framboesia of two years' duration.

HISTORY:-

About two years prior to attending hospital a painful lesion made its appearance on the heel of the right foot.

Some months later papules appeared on the trunk and extremities, the flexor surfaces of the upper extremities being chiefly attacked.

Nine months ago the general eruption disappeared.

EXAMINATION:-

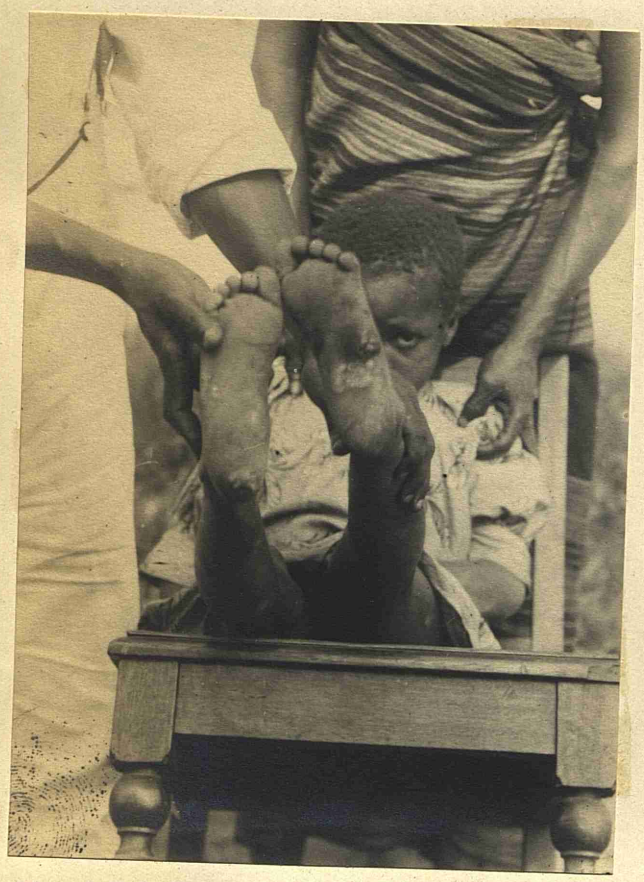
Faint pigmented areas on the body and extremities were decernible, the upper extremities have an appearance of mottling.

These areas are the remnants of previous Yaw lesions. The soles of the feet were markedly affected, causing lameness with severe pain. These lesions were of the eruptive stages, but due to coalescence of papules and superimposed pyogenic infection were of large size.

Two large ulcers with skin and muscle destruction were present on the posterior aspects of both thighs, presenting the appearance of what I determine as Yaws in the Tertiary stage.

CASE · XVI

PLATE · 16I



SHOWING · THE · SECONDARY ULCERATIVE · LESIONS · OF · THE FEET · AND · HEEL

PLATE · 16A

AFTER · THREE · INTRAVENOUS INJECTIONS · IN · 18 · DAYS DISAPPEARANCE · OF SECONDARY · LESIONS OF · FEET · BUT · PERSISTING TERTIARY · ON · RIGHT THIGH · WITH · HEALING AND · CICATRICIAL · CONTRACTION OF · LESION · ON · NEIGHBOURING LIMB

Case 16 (contd.)

TREATMENT:-

Three injections of Neosalvarsan 0.3 grms. was administered intravenously every sixth day and thereafter treatment continued as described under Treatment.

PLATE 16

Shows the secondary lesions on the soles of the feet and heel.

PLATE 16a

Taken eighteen days after admission and patient treated with three intravenous injections of Neosalvarsan shows the wonderful disappearance of the lesions from the soles of the feet and heel.

The deep tertiary lesion of the right lower extremity still persists whilst the smaller lesion on the neighbouring limb shows signs of cicatricial formation with marked hollowing due to the loss of tissue.

Four months elapsed before the lesions disappeared leaving behind well marked hollows and cicatricial contractions.

CASE 17.

Komla when first seen was suffering from Tertiary Yaws.

HISTORY:-

The only history available in this case was that three years ago his body was covered"with some disease that weeped" and which disappeared eighteen months ago.

The patient's guardian firmly believed that Potassium Iodidi bought in the native market and administered in large doses for a considerable period cured the eruptive stage.

EXAMINATION:-

Beyond the deep ulceration of the right heel and fissuring of the solar epidermis not a vestige of Yaw infection was to be found.

There was complete loss of epidermis of the heel and the base of the ulcer was filled with healthy granulations which bled on being probed.

There can be little doubt that this deep destructive condition of the foot is the often unrecognised Tertiary stage of Framboesia.

TREATMENT:-

An initial intravenous injection of 0.3 grms. of Neo-salvarsan followed by a dose of 0.45 within twelve days was administered and the patient given Potassium Iodidi 15 grains three times a day.

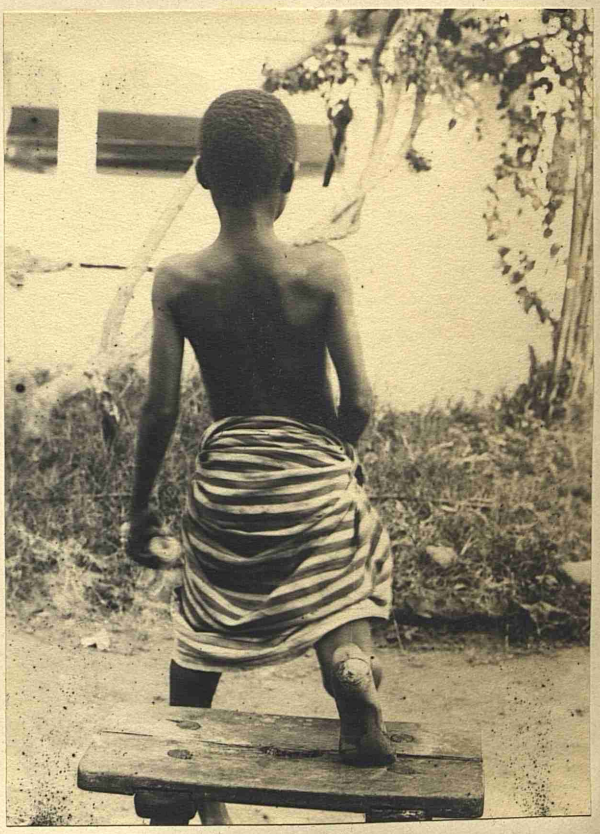
CASE · XVII

PLATE · 17

SHOWING · THE · TERTIARY · YAW
OF · THE · HEEL

NOTE: COMPLETE · LOSS · OF
EPIDERMIS · AND · HOLLOW
FULL · OF · GRANULATIONS

PLATE · 17A



AFTER · TWELVE · DAYS · TREATMENT
WITH · NEOSALVARSAN · 0·3 GRAMS
AND · 0·45 GRAMS · GIVEN · INTRA-
VENOUSLY

NOTE; HEALING · COMMENCED
BUT · FISSURING · OF
SOLAR · EPIDERMIS
STILL · PRESENT

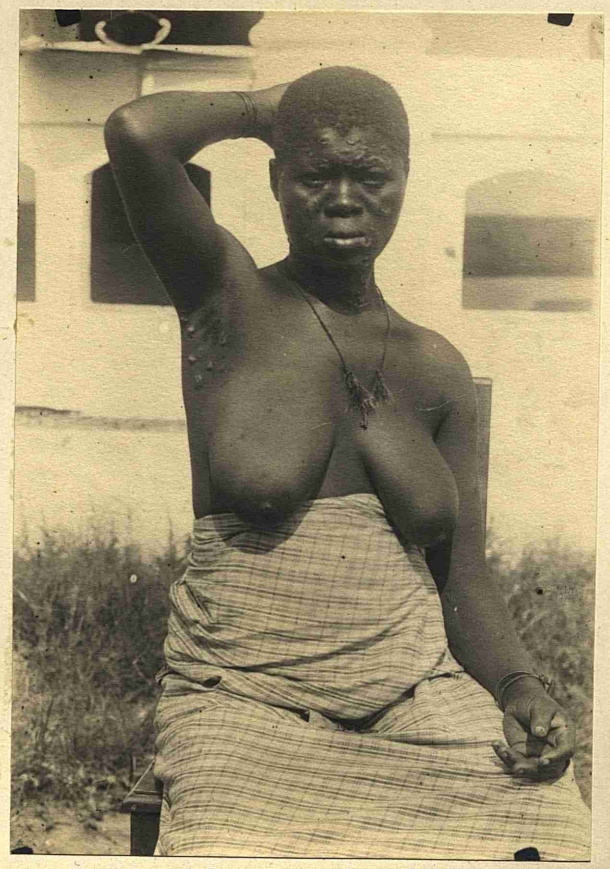
Case 17 (contd.)

PLATES 18, 19, 19a, 20 and 20a show Framboesia cases in the Secondary stage of general eruption.

These cases declined treatment and returned to their villages to spread infection and in all probability develope in months or years the tertiary and final stage of this dreadful malady.

CASE · XVIII

PLATE · 18



GENERAL · ERUPTION
OF · FRAMBOESIA

CASE · XIX

PLATE · 19

PLATE · 19A

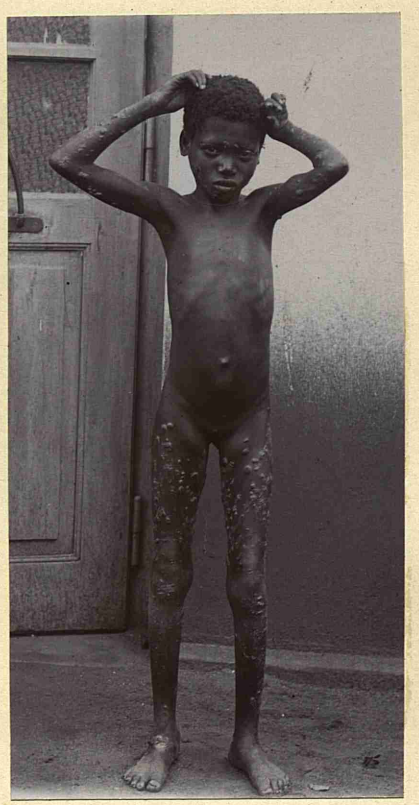
GENERAL · ERUPTION
OF · FRAMBOESIA ·

POSTERIOR
ASPECT —

ANTERIOR
ASPECT —

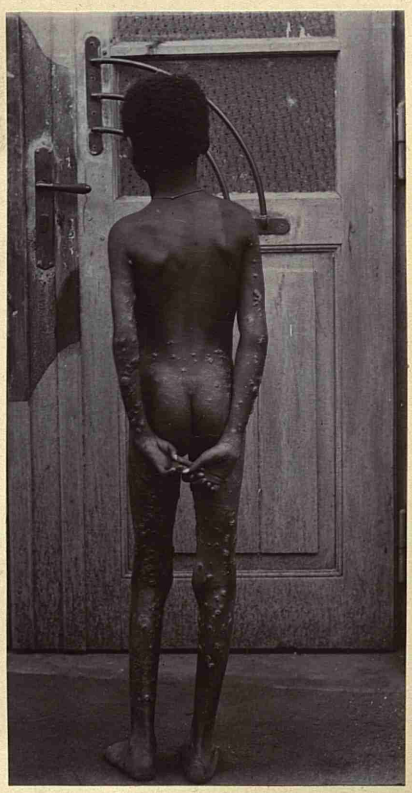
CASE · XX

PLATE · 20



ANTERIOR · ASPECT

PLATE · 20A

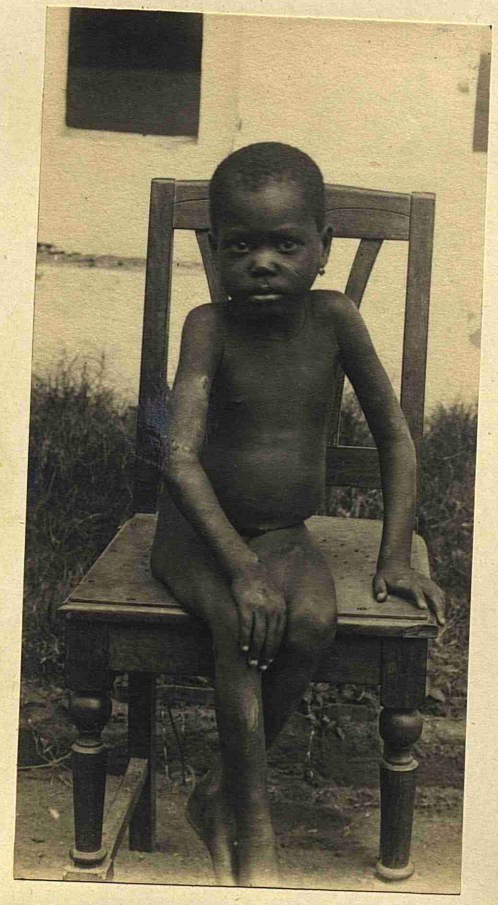


POSTERIOR · ASPECT

GENERAL · ERUPTION
OF · FRAMBOESIA

CASE XXI

PLATE · 21



TERTIARY
FRAMBOESIA

CASE · XXII

PLATE · 21

TERTIARY · YAW
AT · BASE · OF · · · ·
LARGE · LEFT · TOE

TREATMENT OF FRAMBOESIA.

Since the discovery of Salvarsan and the more soluble preparation Neosalvarsan there has been a revolution in the treatment of Yaws.

Formerly the Iodides and Mercury were the chief drugs administered with varying success.

Following the treatment of Trypanosomiasis with Tartar Emetic and Atoxyl, investigators turned to these drugs but with no success.

The Arsenical Compounds have now made a reputation for themselves in the successful treatment of Spirochaetal diseases.

The victims of Framboesia have to-day a remedy in these modern drugs and the native in his affliction and semi civilisation would, if he knew more, tender his thanks to Ehrlich 1/ and his pupil Hata.

With these modern drugs on so high a plane the investigator and observer of Framboesia must not let the Iodides fall into the background for the latter drugs are absolutely essential to the treatment of this Papillomatous disease in its tertiary stage.

Between Salvarsan and Neosalvarsan there is little to chose; but for rapid administration in an outdoor department or in treating a large number of cases while on a district

tour of inspection the latter preparation is preferable.

In a tropical climate like Africa where water has to be carried for long distances, which is a great consideration, the more soluble preparation recommends itself.

In districts remote from a station the preparation Hyposal given intramuscularly proves most useful. There one has the drug in oil and in an ampoule which is a syringe in itself with a sterile needle in a separate hermetically sealed tube. Its results are good; but somewhat slower than the Neosalvarsan preparation.

To attain success there must be a Standard of Treatment for this Papillomatous Disease; but the investigator without elaborate laboratory means and more often than not with only a mud hut at his disposal has to depart from the desirable ideal and treat as circumstances best permit.

The Salvarsan group can be given intramuscularly or by the intravenous route, the latter in general practice is preferable as there is no accompanying pain and as a rule little reaction, factors inducing patients to return for treatment.

All the cases in this treatise were given intravenous injections of the old Pre War German Neosalvarsan.

From experience from the many huddreds of cases I have treated I have been forced to set up two standards of Treatment.

(1) Inpatient Treatment.

(2) Outdoor treatment which is applicable to the treatment of cases while touring districts.

INDOOR TREATMENT.

Patient is given a bath and following recording of history a physical examination in general is made, special importance being directed to the analysis of the Urine.

A purge is then given and the patient placed on light diet for two days.

The morning following admission to hospital the preparation of the patient takes place.

As a balance or weighing machine is regarded as a luxury in a West African Station a rough estimate is made of the patient's weight.

The average male of $8\frac{1}{2}$ - 10 stones is given an injection of 0.6 grms. Neosalvarsan, and average female of $7\frac{1}{2}$ stones upwards a similar dose.

Males above ten stones in weight receive an injection of 0.75 grms.

Although these doses are the general average each case must be treated on its individual merits, regarding physical state of patient and disease intensity.

PREPARATION OF THE DRUG FOR USE:-

Once the sealed Ampoule of Neosalvarsan is broken the drug must be used immediately or discarded.

The powdered Neosalvarsan is dissolved in 20 cc. of distilled water and administered intravenously with an all glass Ehrlich syringe or if not available a record syringe with a Platino-iridium needle of good bore.

The ideal syringe is the all glass Ehrlich syringe.

PREPARATION FOR INJECTION:-

The arm is well cleansed as for an operation and a tourniquet applied over the middle of the upper arm.

The needle is then inserted into the Median Basilic Vein of the arm. As evidence of penetration into the lumen of the vein a little blood is drawn into the syringe and thereafter the full contents of the syringe injected, the tourniquet prior to injection being fully relaxed.

The recumbent position should be encouraged for a short period and if any severe reaction shows itself the patient should be enforced to remain in bed for a few days.

As a rule the reactions are of a minor degree; but occasionally one meets with a case where there is a marked rise in temperature, malaise, and anorexia, and most important a facies pathopneumonic of severe reaction.

NUMBER OF INJECTIONS:-

Six injections should be given at weekly intervals, all of the same dosage unless when the initial dose has been a small one.

Thereafter two doses of similar quantity should be given

in the spring and autumn for the first year.

The patient although confident in himself that cure has resulted should be encouraged to take Potassium Iodide fifteen grains thrice daily for the first and fourth week of every month for a year.

If unable to report after that interval Potassium Iodidi should be taken for the first and fourth weeks during the spring and autumn for two years.

OUTDOOR TREATMENT.

As many natives come long distances for treatment ways and means have to be considered whereby they will be encouraged to attend in a systematic manner.

One can generally obtain systematic routine treatment if days for injections are made to coincide with the days that the native visits market.

The period thus fixed on for a series of injections was every tenth day and the native is usually quite agreeable to remain a day if necessary.

The Outdoor Treatment is thus essentially the same as that of Indoor with the exception that the injections are given at ten days intervals.

All the cases in this treatise were given injections at intervals of nine to ten days and the photographs taken after treatment on the ninth day with the exception of a few tertiary cases which were photographed on the fourteenth.

Where evidence by means of photographing is desired to demonstrate improvement as a result of treatment, it is essential that this must be done at an early stage, for once the patients find the external manifestations of the disease disappearing, his failing is to make for home at once.

With forethought and previous preparation regular field days can be set aside solely for the treatment of Framboesia cases.

TREATMENT OF ULCERATIONS:-

Where Yaw lesions have a superimposed pyogenic infection the saline bath treatment is superior to any other.

Where the site does not permit of bath treatment gauze soaked in saline and covered with waterproof answers the purpose equally well.

In very foul ulceration the old time charcoal poultice still finds a place of honour.

Many lesions have become so phagadenic that all undermined edges must be trimmed and curetted with the spoon.

A solution of Acriflavine 1 in 800 has a wonderful effect when applied on a gauze dressing.

The use of a Bier's bandage has proved useful in many cases.

TREATMENT OF TERTIARY YAWS.

Neosalvarsan and its allied preparations cannot be expected to work miracles in the treatment of this final stage of the disease, for where there is destruction of muscle and bone tissues what is lost cannot be replaced.

That diminution of progressive ulceration takes place is beyond question; but deformity to begin with is deformity to the end.

My experience has led me to place my faith in Potassium Iodide in the treatment of Tertiary Framboesia.

PROGNOSIS:-

CAN FRAMBOESIA BE CURED?

How often does one hear that cry in tropical Africa and what can be the answer.

The reply is difficult when asked by an investigator, for what standard is to be set for the term Cure?

In a country like West Africa where necessarily the periodic residence must be short and where exigencies in a service arise quickly it is almost impossible for an investigator to keep in touch with cases tour after tour; but if it be accepted that cases seen six years after treatment without relapse may be regarded as cured then the answer is assuredly in the affirmative.

One does occasionally see relapses in cases after

treatment, but the percentage is small in comparison with the number seen clear of all manifestation of the disease five or six years later.

A factor to be borne in mind is, does the native honestly persist in treatment after he is outside the supervision of hospital and its Medical Officer?

So great has been the advance in the treatment of Framboesia and Tropical Diseases in general that yet there are prospects of a brighter future for the inhabitants of these climes or in the words of an old Ashanti proverb, "obi nnim adekyee asem " ("No one knows the story of tomorrow's dawn").

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ERRATA.

PERTENNUE read PERTENUE.