The Diagnosis
between
Yaws & Syphilis.

A note upon an affection
which has some points in
common with both the
above diseases.
I much regret that certain photographs referred to in this thesis have been mislaid since writing it and that fresh copies are not yet to hand.

F. F. Austin

Rustenburg
Fran. stack.
THE DIAGNOSIS BETWEEN YAWS AND SYPHILIS.

A note upon an affection which has some points in common with both the above diseases.

Seeing that there are still a large number of qualified medical practitioners who are unacquainted even with the name of Yaws or Framboesia, it will be not out of place for me to give a short résumé of a few of the principal facts antecedent thereto; this is the more necessary because many (otherwise correct) textbooks either omit altogether to mention it or are content to relegate their description to a few lines.

NOMENCLATURE.

"YAWS", having a wide distribution throughout the tropical and sub-tropical regions and affecting many different nations, has in addition to its more scientific names a variety of local names, of which the principal are found below.

- Framboesia.
- Pian (French & German)
- Button Scurvy.
- Verruga Peruviana.
- Peruvian Wart.
- Buba, Boba & Patta, (West Indies)
- Tonga or Coco (Fiji)
- Lupani or Tono (Samoa)
- Paranghi. (Ceylon)

To these may I think be added the Basuto or Bechuana word "Thosoola", if, as I believe to be the case, the disease known under that name among the Basutos is an
A peculiar form of "Yaws" and not Syphilis as has been generally stated. It is called "vuil zichte" by the Boers i.e. the filthy disease.

**DEFINITION ; SYMPTOMS &c.**

"Yaws" is a contagious disease, sometimes epidemic, characterised by an eruption of yellowish or reddish tubercles, which gradually develop into a moist exuding fungus without marked constitutional symptoms or at any rate with only such symptoms as are the result of prolonged discharge, as general debility & emaciation, such results however are rare. In contrasting it with Syphilis it should be noted that it has nothing (as a rule) to do with sexual intercourse: most patients get it during infancy or before they reach the age of about 3 years, the seat of inoculation being often an open sore or wound.

**INCUBATION PERIOD.**

This is about the same as of Syphilis, three weeks to a month, although it is believed by some to be sometimes as long as ten weeks.

**IMMUNITY.**

Perfect immunity is conferred by one attack.

**DISTRIBUTION.**

"Yaws" is generally considered a tropical disease but it certainly exists in places in the sub-tropical zone, only in a slightly altered form, so that it becomes most commonly diagnosed as Syphilis. In this region (Rustenburg, Transvaal. Latitude 26° 30'N.) the disease I am discussing, is such that it cannot be diagnosed as Syphilis by any careful observer, and yet it
presents several points widely different from "Yaws" as described by some of the best and latest authors. These points, which I shall mention later, can, to my mind, only be due to different climate.

In Africa "Yaws" is found on the West Coast from Senegambia in the north to Angola in the south; apparently throughout the whole of the Western Soudan, but is not so marked in the Nile Valley & North East Africa.

Dr. Parke of the Emin Pasha relief expedition, mentions that in 1838 in the neighbourhood west of the Albert Nyanza the natives were much affected with "Syphilis". I regret that his untimely death has prevented me from communicating with Dr Parke on the subject, but seeing that 14 years ago the subject of "yaws" had not been much discussed, I think it possible that it was "Yaws" and not Syphilis that he saw, the superficial likeness being so great, and also, how could Syphilis exist among a tribe of natives, who as far as I can gather never had any opportunity whatever of communicating with the outside world, with its civilization and Syphilis?

A disease of like nature exists also among the natives South of Lake Tanganyika, I understand. Dr. Martin of the British South African Company, at Abercorn just south of the lake being an authority on the subject.

"Yaws" is found also in Madagascar, Mozambique, Moluccas, Java & Sumatra. It is also endemic in Ceylon, New Caledonia, Fiji & Samoa.

In the West Indies in San Domingo, Jamaica, Barbados, Martinique, Guadeloupe, Santa Lucia & Dominica.
On the American Continent it exists all over. Brazil and the Guianas, also in parts of Costa Rica (Punta Arenas)

It has been said to attack coloured races more readily than whites, but this is a fallacy, the percentages being approximately the same, the apparent excess of coloured cases being due to the fact that it is only endemic in countries where the coloured population is in a very large majority; also the greater personal cleanliness of the whites is bound to diminish the risk of contagion, also their better attention to the dressing and covering up of wounds and lesions where the poison might gain access to the blood.

Dr. Powell "Yaws in India" page 2, says "The comparative immunity of Europeans is only to be expected, as even in the warmest weather their bodies are protected by clothes. Care is exercised in covering with dressings even trivial wounds and sores. The coolie and negro on the other hand, as a rule, wear only a loin-cloth; wounds and sores are left open to take care of themselves. The European also will avoid with loathing anyone suffering from yaws." The accompanying photographs, kindly sent me by Dr. Powell, from India, as illustrating Yaws as seen there to compare it with the disease I shall describe, will be referred to later: though not taken here they are exactly illustrative of the disease as seen in this country.
BIBLIOGRAPHY.

I much regret that owing to the war in S. Africa I have been quite unable to collect all the books of reference on the subject, but I have to acknowledge the great assistance I have received from some of Dr. Arthur Powell's (Cachar, Ceylon) communications (v. infra). I attach the following list which can be referred to by those of my confrères who are more fortunately situated than myself as regards to proximity to publishers and reference libraries.

Dr. Prout, (colonial surgeon Sierra Leone) Article upon Yaws in Dr. Andrew Davidson's "Hygiene and Diseases of warm climates"

Colonial Office Reports, viz.

Report on Yaws for Colonial Government in West Indies by Dr. Nicholis.

Report on Yaws by Dr. Numa Rat, reprinted in Hutchinson's Archives.

An essay reprinted by the New Sydenham Society about 3 years ago.

Yaws in India by Arthur Powell (B.A. M.Ch. Surgeon at N.W. Cachar Hospital Assam)

"Is Yaws Syphilis" Replies to Mr. Hutchinson's questions by Arthur Powell.

"Further Observations on Framboesia or Yaws, its Sequelae: Fool Yaws" by A. Powell, Reprinted from the Indian Medical Gazette.


Williamson. "Medical & Miscellaneous Observations relative to the West Indian Islands". 1817.

Hunter. "Diseases of the Army in Jamaica". 1796.

Moseley. "Treatise on Tropical Disease". 1783.


Hirsch. "Geographical & Historical Pathology". 1885.


Thomas. "Modern Practice of Physic" 1821.

Dancer. "The Medical Assistant" Jamaica, 1819.

Maxwell "Observations on Yaws" Edinburgh, 1839.


By reference to a few of the above a more minute description of the course and symptoms of Yaws can be obtained, which need not be further discussed here. Sufficient mention has been made of the symptoms &c. and sufficient passages quoted to enable anyone unacquainted with Yaws to see the points of comparison which I wish to make between the disease called "Thosoola" seen in this part of the country and "Yaws" as classically described.

History of the Disease as seen in the Western Transvaal.

The earliest account that I have been able to get of the disease here is that in 1879 the son of a certain Kaffir captain named Ratebedi came from Basutoland with it, it probably spread until 1881 when the Boer Government deputed a certain Mr. Rex, an old elephant hunter to look after the matter in this district: it was before there were many, if any, qualified doctors practising in the country and Mr. Rex (an Englishman) having an education considerably superior to that of his fellows, the Boers, was put in medical charge of what was apparently an epidemic of Yaws. It began in a native village of about 2000 inhabitants, eight miles from Rustenburg; of the 2000 inhabitants, apparently about one-third or more
(one informant says more) were affected with it at once. The disease was treated with Iodide of Potash in small doses and caustics (Cu.SS +) without apparently much result, according to report; further details of the treatment I did not get, but apparently it was very irregularly carried out and did not have a fair chance. The disease was of exactly the same nature as that seen in the same village at the present time; the only difference being in the number of cases, twenty years ago practically the whole population had it and recovered, 33% at least were affected at one time during the 3-4 years that it existed. While in 1892 when I first came to know the village personally, I think 25% would have been the approximate figure, and now 1902, 0.1% will cover it, so that the opportunities for clinical study of it are, I regret to say, exceedingly limited. This last number (0.1%) I have been able to verify with something like certainty, because two years ago during a small-pox epidemic, all the inhabitants had to be vaccinated under my supervision. On that occasion when vaccinating, I saw one case of "Thosoola" but the natives try as a rule to conceal the disease, and do not bring their children for vaccination when they are affected, because they have a vague fear of the law, which they know compels them to be under treatment for contagious diseases. In a neighbouring native village about 25 miles from the village referred to above, I had among 400 candidates for vaccination, two cases of "Thosoola" presented to me.
In the native quarter of the town of Rustenburg inhabited by the coloured servants of the white people, there were in 1889 about 10% thus affected. This was speedily stamped out through the energy of my predecessor Dr. Brock, who inspected the coloured inhabitants (about 200 in number) every month. In 1891 when I was first present at these inspections there were only three cases. In these cases it was treated with Pot. Iod & Hydr. Perchloride internally and blue ointment, diluted one in four, for the sores. Furthermore each case was well looked after, kept clean, segregated & systematically regularly inspected.

There are no cases in the native quarter at Rustenburg at present, but real Syphilis has appeared there among some prostitutes who have been called into existence by the presence of the troops, (no prostitutes existed before the town was garrisoned by the British) at least three soldiers of the Derby regiment contracted typical hard chancre on Dec. 24th. 1901, from a woman who did not belong to Rustenburg, so that the comparison was more easily made. Even the natives, a large number of whom recognise the existence of Syphilis as a separate disease, knew the difference between the two. Syphilis is called by them "Spaniol" in the Boer language, and in theory at any rate, is never confused with "Thosoola" by the more intelligent, though naturally in practical diagnosis they might possibly make mistakes.
It is extremely regrettable that circumstances do not allow of me inoculating "Thosoola" patients with syphilis or syphilitic patients with "Thosoola" and so settle the matter definitely once and for all whether the diseases are identical or not. As matters stand we can only wait until some native woman, known to myself to be immune from "Thosoola" through having had it, (and I have known many such) becomes a prostitute and gets inoculated with Syphilis by the troops. This is exceedingly unsatisfactory and emphasises the great disadvantage under which we work in this respect compared with, for instance, the French doctors Paulet and Charlouis, (Yaws in India, p.4) who are apparently allowed to inoculate patients for scientific purposes as they wish.

The symptoms of "Thosoola" are fully tabulated below, showing the various points of comparison between the three viz. (1) Syphilis, (2) Yaws as classically described by Powell, & (3) The disease under discussion as observed in the past in this part, so that I need only touch upon them here.

Existing circumstances make it well nigh impossible here to study cases clinically throughout; even when cases were more numerous one could only see those cases that were occasionally brought in from the native villages; these after receiving their medicines, consisting usually of 48 doses of Pot. Iod. & Hydrg. and dilute blue ointment, return to the obscurity of
their own homes, (generally 10-20 miles away) where it is practically impossible to find them again. They do not return and only very occasionally send in for a second supply of medicine, the fortnight or three weeks treatment being generally sufficient to alleviate the symptoms to such an extent that nature can complete the cure: anything of the nature of a hospital for contagious diseases where the case could be treated clinically studied from beginning to end, has been an impossibility: the details of the period of incubation in individual cases are especially difficult to obtain; the disease has however affected so many hundreds of individuals living in one community that any intelligent member of that community can give a very fair general description of the clinical symptoms, these descriptions always corroborating one another, their unanimity respecting (1) Incubation, (2) The perfect immunity conferred by one attack, being noticeable as also their non-recognition of remote or tertiary symptoms effects: as I shall point out further on tertiary effects do exist though very rarely, only in 1/3 or 2% of the cases.

The following case which came to me and was under my observation more or less from start to finish is typical.

Gabriel Nhuunoo living in a village of about five houses, six miles from me, required an additional hand at harvest time; he procures the assistance of a woman whose baby (unknown to him) has "Thosoola", the woman herself had had it when a child, they live in the same
hut, his children naturally playing with the new arrival, three and a half to four weeks later he notices symptoms of "Thosoola" in his own baby, viz first of all mucous patches at the angles of the mouth, about the same time or next day the discrete mucous granulomata (inoculating the opposite surface) in armpits, between nates, and in the groins &c., also a few slightly raised spots (4 or 5) on the body, covered with yellow scurfy scabs, the result of the disease. The sores in this child's case were mostly rather smaller than a three-penny piece. The father recognised the disease at once, and, as he had not far to come, brings the child in for treatment: ordinarily the patient is not personally brought in, owing to distance, the diagnosis of the parents being sufficiently certain: in this case however they lived comparatively close to my residence, being only six miles off; this child was still at the breast being about six months old, its brother, was also affected at the same time being about 2½ years. They got completely over it in six weeks and one month respectively, their treatment being, Pot. Iod. (gr1-11) & Liq. Hydrg. Perchl. (gr10-14) internally, 3 times daily for about 24 days, & dilute blue ointment externally. The mother got it some weeks later than the children and put it down to infection from the youngest child while suckling it; she however guessed she had caught it having felt the characteristic pains in the bones, and applied for medicine at once, before the sores came out: as a probable consequence of her early treatment
she only had a very light attack, only two sores appearing, both on the neck. The husband had connection with her the same night that she complained of the pains, he remembering the fact because she warned him that she felt that she was in for the disease: he was not infected. The eldest son, aged about 20, living about 8 miles from his parents, got the disease about the same time from an altogether different source of infection, and was treated by his fellow-natives in the manner customary to them, viz. Take a bit of copper subnate, about the size of a hazel nut, dissolve in warm water, and drink in about 24 doses, one dose 2-3 times daily; CuSo4, in crystals to be used as a local application to the sores at the same time; I question whether this treatment shortens the course of the disease, "vis naturae medicatrix" that trustworthy partner so helpful to all practitioners, being probably the main factor in the cure. He was about 4 months sick, 4-6 months being the usual period for the disease when untreated.

The pains in the bones appear to be always present; generally a day or so before the sores make their appearance. I have not had the opportunity of personally noting if there is a rise of temperature, but I have little doubt about it, because those who have had the disease, often compare it to the pains present at the beginning of an ordinary attack of malarial fever which is very prevalent here some years.
As regards infection through a wound I have never seen it myself, the only information that I can get regarding this detail is that if you have a wound on you when "Thosoola" begins to come out, then the wound "goes all wrong" and gets very dirty, which is I think, in its way, evidence in that direction.

As regards the existence of the "Mother Jaw" I have been unable to obtain any evidence, I have not seen it myself, nor have I been able to find any patient who has mentioned any spot as being more persistent than the others.

The disease, recognised by the natives here, which they call by the Dutch word "Spaniol" is, I have no doubt in my own mind, Syphilis. The natives all agree that it is not "Thosoola" though apparently like it; it is said to have been brought into the country by the servants of the Boers when the country was first occupied; no one can describe it for me, most referring to it as a disease they have heard of only in the dim past: one informant, for instance, mentioning that 36 years ago he remembers a man had it and was put in quarantine with his family, he recovered, but his family did not get it: the same informant tells me that when "Thosoola" first shewed itself, they believed it to be "Spaniol" in the beginning, but afterwards saw that it was not. The word "Spaniol" is evidently connected with the Dutch for Spanish, & meaning the "Spanish Disease", which was one of the early names for
Syphilis, though I have not however been able to trace the historical side of the name fully.

THE PHOTOGRAPHS.

On account of the war here in S. Africa, I have not been able to get any cases photographed, but the accompanying photographs have been kindly supplied by Dr. Powell of Gachar, Assam, for me to compare with the disease here. They are exactly similar to my cases and since seeing them I have not a doubt in my own mind about the disease here being Yaws. Photos. I. & II being especially good of the disease as I know it.

Table to compare Syphilis, Yaws & Thosoola.

For the symptoms of Syphilis and Yaws, I am much indebted to Dr. Powell's replies to Mr. Hutchinson's questions re the similarity between the two diseases.

<table>
<thead>
<tr>
<th>SYPHILIS</th>
<th>YAWS</th>
<th>THOSOOLA</th>
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</thead>
<tbody>
<tr>
<td>1. Primary stage</td>
<td>A primary stage</td>
<td>Same as Yaws except</td>
</tr>
</tbody>
</table>
| most always present | frequently absent. | primary stage always | always absent. muc- | in all respects similar to the subse-
<p>| as the initial ulcer | The first lesion | ways absent. muc- | alent eruption. | quent eruption. |
| chancre.          | The first lesion | always a Granulomaous patches in | in addition. |</p>
<table>
<thead>
<tr>
<th>SYPHILIS</th>
<th>YAWS</th>
<th>THOSOOLA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Lymphatic glands usually enlarged and indurated,</td>
<td>2. Glands normal except occasionally from septic absorption.</td>
<td>2. Same as Yaws.</td>
</tr>
<tr>
<td>3 A Secondary stage 3. The general eruption is marked by cutaneous ions frequently</td>
<td>3. Eruption appears in 3-4 weeks after inoculation.</td>
<td>3. Same as Yaws.</td>
</tr>
<tr>
<td>4 Eruption polymorphic &amp; rarely granulomatous.</td>
<td>4. Eruption invariably granuloma or papilloma or the abortive stage of the granuloma.</td>
<td>4. Same as Yaws.</td>
</tr>
<tr>
<td>5 As a rule the secondary eruption lasts 3-6 months to 6 years.</td>
<td>5. Eruption lasts about 2 months under treatment and is seldom cured.</td>
<td>5. As long as Yaws lasts.</td>
</tr>
<tr>
<td>6. Discharge of Syphilis seldom contains its discharges as far as my experience goes, are inoculable.</td>
<td>6. Same as Yaws.</td>
<td>6. Same as Yaws.</td>
</tr>
<tr>
<td>SYPHILIS.</td>
<td>YAWS.</td>
<td>THOOSOOLA.</td>
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<tr>
<td>-------------------------------</td>
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<td>----------------</td>
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<tr>
<td>after a couple of years.</td>
<td></td>
<td>which is however very limited in this respect. I have been unable to make definite experiments in the matter.</td>
</tr>
</tbody>
</table>

| ion usually accompany these phenomena, sore throat common, | Induration of glands mucous tubercles pæœcia, no ἄκριτις, |
| panied by lesions Granulomata near anus may resemble glands, never alo- | aloœœcia, ἄκριτις, & condylomata of |
| Induration of glands mucous tubercles pæœcia, no ἄκριτις, | Granulomata come out |
| Condylomata are lim-Syphilis, but anywhere, but mostly | Condylomata are lim-Syphilis, but anywhere, but mostly |
| iited to junction they are identical on sweat-soaked | iited to junction they are identical on sweat-soaked |
| of skin & mucous with the eruption surfaces. | of skin & mucous with the eruption surfaces. |
| membrane, or sweat-elsewhere on the | membrane, or sweat-elsewhere on the |
| sodden portions of skin. | sodden portions of skin. |

8. Unless complica- 8. Frequently the initial chancre disappear at the site | 8. Same as Yaws, but it must not be |
| tions arise, the ini- Yaw first to appear it must not be | thought that the |
| appears with the on-of inoculation is the last to heal anyway comparable |
| set of secondary symptoms, or at least is the first obstinacy, earns | set of secondary symptoms, or at least is the first obstinacy, earns |
| symptom to disappear the title of "Moth-pear. | symptom to disappear the title of "Moth-pear. |
| Yaw" surviving | Yaw" surviving |
| all the other gran- | all the other gran- |
| ulomata. | ulomata. |
Syphilis.

Yaws.

Thosoola.

9. Is liable to tertiary sequelae. I have seen un-
tiary sequelae. Not observed by Dr. doubted tertiary
Powell & some others. sequelae, chiefly
ulcerated throat &

Nasal mucous mem-

brane. Necrosis of
bones of the nose
& consequent falling
in of that organ.

Tertiary ulceration
of the skin occa-

sionally of the face
& occasionally of
the thighs legs &

arms, rarely necros-

esis of long bones.

These symptoms al-
ways in patients,
who confess to hav-
ing had Thosoola in
earlier days, the
 patients however

never recognise
these symptoms as
having anything to
do with their at-
tack of Thosoola.
I estimate the number of those affected with tertiary symptoms to be about 1% of those who have had Thosoola & not been treated. The patients who have been once treated & kept under observation since 1891. (v. page 7) have so far had no tertiary symptoms. (v. Note)

NOTE. Of course the possible sources of error in this matter are obvious, the patients who are the subjects of tertiary symptoms all allege they had Thosoola proper many years ago, 10 to 20 generally, and I have only their word to go upon, obviously it is practically impossible for any practitioner here to have a continual record of a patient for (say) 20 years from the time he got the first symptoms until the time tertiary symptoms might shew themselves. I mention this to anticipate the criticisms of those who maintain that tertiary symptoms never exist; they may maintain that my argument regarding tertiary symptoms derives its support from the diagnoses of ignorant patients. I can only answer that
I am perfectly convinced myself of the fact that the patients referred to really did have Thosoola in previous years, and only Thosoola, and that the tertiary symptoms were actually the result of these attacks.

10. Is usually transmitted by the par-tary or congenital same as Yaws, but I ent in the eruptive no case has been have not been able stage. A very large published, on the to prove Dr. Pow-proportion of such contrary dozens of ell's statement as offspring develop. children born when regards inoculation. such symptoms with- their parents in a few weeks of were affected have birth. remained healthy.

Such children possess no immunity from Yaws & may be subsequently inoculated.

11. Contagion is on the whole rare active, it is quite but my experience compared with the the exception for (as above) is most frequency of expo-one suffering from not so definite sure to possible a wound or ulcer as regards inocu-inoculation. in the same house ion through wounds.

Mr. Hutchinson has drawn attention to as a Yaws patient to escape the di-the rarity of ch-sease.
<table>
<thead>
<tr>
<th>SYPHILIS.</th>
<th>YAWS.</th>
<th>THOSOOLA.</th>
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<tbody>
<tr>
<td>11. (Continued)</td>
<td></td>
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<tr>
<td>fingers, and estimates that not once in a hundred acts of coition with syphilitic partners is a chancre contracted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Most commonly acquired when the sexual functions are active in early childhood Yaws. are acquired from 2-12, years of age are active in early adulthood.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Symptoms usually pyrexia seems to have had no effect. Pyrexia seems to have a curative effect. Pyrexia seems not to have effect.</td>
<td></td>
<td></td>
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<tr>
<td>14. An attack of Syphilis does not confer immunity from Yaws. An attack of Yaws does not confer immunity from Syphilis. Owing to the legal impossibility of inoculating cases known to be immune to Yaws (through having had it) with Syphilis, this most interesting point must remain in abeyance for the time being.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Syphilis

Syphilis in infants is when unspontaneously, the child disappears. The same as Yaws.

Yaws disappears spontaneously. The child is very amenable. In Dr. Powell's experience, Yaws have always done very well when treated with Mercury and Iodides. The child is very amenable to treatment with Mercury and Iodides.

Pepto and MV do not seem to be affected by the experience of Tertiary disease. It only affects the child when Mercury or Iodides, but they derive little benefit from Mercury or Iodides. It is not when the child is affected by the disease that the child is affected by the disease. It is the child's disease that is affected by the disease. It is not the child's health but little benefit. The child's health is but little benefit.

The child's health is but little benefit. The child is very amenable. In Dr. Powell's experience, Yaws have always done very well when treated with Mercury and Iodides. The child is very amenable to treatment with Mercury and Iodides.

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18. Cannot be inoculated in fowls. transmissible to fowls. to carry out, owing to my being unable to get fresh cases of Thosoola in from the native villages owing to war restrictions upon traffic.

19. No microbe is recognised as characteristic of Syphilis. A micrococcus yeast sometimes examination of the cococcus has been found by Dr. Powell discharge from Thosoola sores has been prevented by the circumstances attendant upon the war. Dr. Powell who has produced typical Yaws culture of this cococcus has, how-ever, been good enough to promise to make all the necessary bacteriological examinations as soon as I am able to send him the discharge. It is to be regretted that anything of the nature of a bacteriological laboratory is altogether unattainable in this district. (Rustenburg, Transvaal).
In conclusion I can only state that the disease which I have for convenience called by its Sesuto name of "Thosoola," is in my opinion undoubtedly real Yaws. The points of difference are only in Section 9. (Tertiary effects, which I find exist in about 1%.) Section 16. Treatment by Mercury & Iodides. In this however though my experience is at variance with Dr. Powell's, many other observers (the majority I think) agree with me. Sections 14 & 19 must be considered as not yet completed.

The Disease will probably remain endemic among the natives of the Transvaal, and attract little notice except when native nurses infect the white children entrusted to their charge, instances of which have come under my notice some 20 to 20 times. The fact must however never be lost sight of by the Government that an "unsettled" or hitherto untouched community of natives, may at any time become affected by it, with most untoward results to themselves, and their powers of labour, & to their white masters. Such was the case in the West Indies, according to Bowerbank, "The Coolie immigration was crippled by the ravages of the disease" and apparently a great loss to the community resulted owing to the impossibility of getting Coolie labour.

In conclusion, I wish again to express my indebtedness to Dr. Arthur Powell for the kind manner in which he has placed his works upon the subject at my disposal, as also for the many hints I gathered from a discussion I was able to have with him upon it when he
passed through Rustenburg in charge of a portion of Lumsden's Horse, following De Wet in August 1900. His kind offer to examine bacteriologically in M. Haffine's laboratory, sections & matter from my Thosoola cases, when I can send them to him, I hope to take advantage of later on. Research of any kind in such an out of the way corner as Rustenburg, is only carried on under difficulties; bacteriological research being an impossibility.

F. T. Austin

Rustenburg
Transvaal
March 6, 1902
Many Granulomata arranged in Rings

Good Specimen of Sparse Eruption.
Photographs illustrating themes on flowers
by Francis J. Auden
Restenlund, Rauswal
Eruption Subsiding,
Spots becoming flattened.