Lesions in various stages of development.
These changes are rarely extensive without osteitis also being present.
(Anterior and lateral views of left leg.)
This illustration is typical of these changes in adults, in whom the periosteal deposits in early yaws lesions are not marked. The osteitis of early yaws in children soon becomes an osteo-periostitis (see Fig. 18 A). On healing, all signs of these lesions may disappear. (Right forearm.)
FIG. 18A. OSTEO-PERIOSTITIS AND POLYDACTYLITIS OF EARLY YAWS

These are characteristic of the bony lesions of early yaws in children. In the hands, only the terminal phalanges and cornea may escape the changes. On healing, the bones return almost to normal. Ulceration through the skin does not occur. (Left forearm.)
The widespread distribution of the lesions—on forearms, hands, legs, and feet—is characteristic. Slight gouty is also present.
Involvement of forearm bones. There is considerable polydactylitis and also some gomadou (see Fig. 19).
Recently healed papillomata are also present.
Characteristic lesion of the early stage.
FIG. 19. GOUNDOU

Goundou is a hypertrophic osteitis of the nasal processes of the maxilla. It is a manifestation of early yaws and often resolves completely. In some areas of endemic yaws goundou is very infrequent.
The relation of saber tibia to yaws is not certain. It is often seen in areas of endemic yaws. Forearms may also be bowed.
Ganglion, especially about the wrist, may occur while papillomata are present.
Hydrarthrosis, especially of the knee, may occur in early yaws. (Outer surface of left knee.)
These are often associated with palmar hyperkeratotic late yaws.
These are an extension of hyperkeratotic palmar late yaws
These nodules break down to form ulcers of late yaws. (Dorsum of left wrist.)
FIG. 25A. DISCOID SUPERFICIAL ULCERATED NODULAR LATE YAWS

The coarsely granular base is characteristic. Thin shiny scars always remain.
Large areas of skin may be involved by this type of lesion (the right breast in this illustration). A thin scar remains as the margin extends.
This illustration (of the shin) shows the rough and dirty base that is often present.
FIG. 26 B. DEEP ULCERATED NODULAR LATE YAWS

(Same patient as in Fig. 26 C.)

— 70 —
Loss of tissue and scarring. (Same patient as in Fig. 26 B.)
Thin scars result from such lesions.
Scarring and contractions on the left arm. Bone lesions of late yaws have also occurred, as is shown by the sunken nasal bridge.
FIG. 26 F. DEEP ULCERATED NODULAR LATE YAWS

Bony destruction of the nose. Over half the skin of the face of this patient has been replaced by scars.
The changes are more polymorphic than in hyperkeratotic macular plantar early yaws lesions.
Pigmentary changes are frequently associated with these lesions.
The ultimate results of such lesions, when healing has occurred, are atrophic skin, dyschromia, and contractures of the medial digits.
These lesions usually start on the palms and may extend beyond them.
The periosteal thickening is limited to the destructive lesions.
(Left forearm.)
Fig. 29. Hypertrophic Periostitis of Late Yaws

This lesion often results in thickened, dense bones.
(Left elbow.)
These destructive lesions may ulcerate through the skin. On healing, some changes in the structure of the bone usually remain.

(Right forearm.)
The bones are often thickened, so that localized swellings of the limbs are caused. Ulceration may occur. (Anterior and medial views of right leg.)
Localized swellings of the right arm and wrist. Several ulcerated nodular late yaws lesions were also present in this patient, although this association is not frequent.
Localized swellings have been caused, and the lower one on the left leg has ulcerated.
Ulcration through the skin has occurred. In these patients the bone lesion always precedes ulceration, which is usually only a small opening.

(Inferior surface of right leg.)
Monodactylitis is a characteristic lesion of late yaws bone lesions. Ulceration may occur, and deformity often follows.
There is often involvement of one bone only; the carpal bones may sometimes be involved.
(Right hand.)
Deformity of the fingers may result.
Gummatous osteo-periostitis without ulceration has resulted in the shortening of a digit from the loss of the body of a phalanx.
The fluctuant swelling caused by the lesion of the frontal bone may ulcerate or may be absorbed. Lesions of cranial bones, except for goundou, occur in late yaws only.
Gummatous osteo-periostitis of the skull, with loss of tissue and scarring.
A characteristic lesion of late yaws. In this patient, the destruction has been moderate.
More extensive destruction. Scars of ulcerated nodular late yaws are present on the face. In some more severe lesions the destruction may spread to involve the whole of the palate, so that the nose and mouth are one space.
Active lesions of the palate. The nasal bones and septum had been destroyed previously, so that the nose was collapsed.
This lesion occurs late in the course of the disease, is usually bilateral, and is usually the only lesion present.
These are usually seen in adults and occur late in the disease. They should not be confused with nodular early yaws (see Fig. 10).
ANNEXES
AND
SELECT BIBLIOGRAPHY
### Annex 1

#### Nomenclature and Classification of Yaws

<table>
<thead>
<tr>
<th>International nomenclature of yaws lesions</th>
<th>WHO classification of yaws into nine groups&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Classification of yaws patients in mass campaigns&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Early yaws</strong></td>
<td><strong>Late yaws</strong></td>
<td></td>
</tr>
<tr>
<td>Initial lesions</td>
<td>—</td>
<td>1. Initial lesions</td>
</tr>
<tr>
<td>Papillomata</td>
<td>—</td>
<td>2. Multiple papillomata</td>
</tr>
<tr>
<td>Macules</td>
<td>—</td>
<td>3. &quot;Wet crab&quot; yaws</td>
</tr>
<tr>
<td>Maculo-papules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Micro-papules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plaques</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nodules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperkeratotic early yaws</td>
<td>Hyperkeratotic late yaws</td>
<td>4. Other early skin lesions</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Nodular late yaws</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ulcerated nodular late yaws</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plaques of late yaws</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone and joint early yaws</td>
<td>Bone and joint late yaws</td>
<td>5. Hyperkeratosis</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Juxta-articular nodules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latent early yaws</td>
<td>Latent late yaws</td>
<td>6&lt;sub&gt;(a)&lt;/sub&gt;. Gummata, ulcers</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>6&lt;sub&gt;(b)&lt;/sub&gt;. Gangosa</td>
</tr>
<tr>
<td>Not infected</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Bone and joint lesions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. Latent yaws</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Not infected)</td>
</tr>
</tbody>
</table>


<sup>b</sup> Hackett, C. J. & Guthe, T. (1956) *Bull. Wid Hlth Org.* 15, 869
ANNEX 2

MEMBERS OF THE GROUP OF EXPERTS WHO COLLABORATED IN THE PREPARATION OF AN INTERNATIONAL SCIENTIFIC NOMENCLATURE OF YAWS, 1955

Dr J. A. Carman
P. O. Box 1632, Nairobi, Kenya

Dr A. H. Cruz
Director, Rural Health and Yaws Control Programme
Department of Health
Manila, Philippines

Dr F. S. da Cruz Ferreira
Regional VDT Adviser, WHO Regional Office for Africa
Brazzaville, French Equatorial Africa

Dr E. I. Grin
Director, Centralni Kozno-Venerieni Dispanzer Ministry of Health
Sarajevo, Yugoslavia

Dr F. Nery Guimarães
Instituto Oswaldo Cruz
Caixa Postal 926
Rio de Janeiro, Brazil

Dr T. Guthe
Chief, Venereal Diseases and Treponematoses Section
World Health Organization
Geneva, Switzerland

Professor C. M. Hasselmann
Director, University Clinic and Polyclinic for Dermatology and Venereal Diseases
Erlangen, Germany

Dr E. H. Hermans
Director, Maritime Health Centre
Rotterdam, Netherlands

Professor K. R. Hill
Department of Pathology
Royal Free Hospital
London, England

Dr D. R. Huggins
Regional VDT Adviser, WHO Regional Office for the Western Pacific
P. O. Box 2932, Manila, Philippines

Dr P. E. C. Manson-Bahr
Specialist Physician, Medical Department
P. O. Box 641, Nairobi, Kenya

Dr R. Medina
Director, Research Department
National Institute of Venereology
Caracas, Venezuela

Dr J. S. Meredith
Medical Officer
Medical Headquarters
Dar-es-Salaam, Tanganyika

Dr M. L. R. Montel
2 Square de l'Alboni
Paris 16, France
INTERNATIONAL NOMENCLATURE OF YAWS LESIONS

Dr E. Petrus
Directeur-Administrateur du SERPIAN
Campagne d’éradication du Pian
Département de la Santé Publique
Port-au-Prince, République d’Haiti

Professor M. D. Prates
Director of Pathological Services
P. O. Box 1194
Lourenço Marques, Mozambique

Médecin-Capitaine J. Ridet
Chef de la Section Tréponématoses du SGHMP
Bobo-Dioulasso, Haute-Volta
French West Africa

Dr A. Zahra
Specialist (Epidemiologist)
Rural Health Headquarters
Oji River, near Enugu
Eastern Region, Nigeria

ANNEX 3

MEMBERS OF THE NOMENCLATURE WORKING PARTY
OF THE INTERNATIONAL CONFERENCE ON YAWS CONTROL

Dr H. T. Chaglassian
Professor of Dermatology and Syphilology
American University
Beirut
Lebanon

Dr D. R. Huggins
Regional VDT Adviser, WHO Regional Office for
the Western Pacific
P. O. Box 2932, Manila, Philippines

Dr J. C. Hume
Chief, Health Division, U.S. Technical Co-operation
Mission (ICA)
United States Embassy
New Delhi
India (Chairman)

Médecin-Capitaine J. Ridet
Chef de la Section Tréponématoses du SGHMP
Bobo-Dioulasso, Haute-Volta
French West Africa

Professor M. Soetofo
Director, VD Research Institute
Djalan Panglima Sudirman 36
Sourabaya
Indonesia

Dr C. J. Hackett
Venereal Diseases and Treponematoses Section
World Health Organization
Geneva, Switzerland (Secretary)
SELECT BIBLIOGRAPHY


Botreau-Roussel (1925) Ostéites pianiques "goundou", Paris


Chambers, H. D. (1938) Yaws (framboesia tropica), London


Dubois, A. & Berghe, L. van den (1947) Les maladies des pays chauds, Liege, p. 329


Gutierrez, P. D. (1923) Keratoöis palmaris et plantaris due to framboesia. Arch. Derm. Syph. (Chicago), 8, 382


Hackett, C. J. (1951) Bone lesions of yaws in Uganda, Oxford


Hasselmann, C. M. (1951) Fundamental facts relative to Frambesia tropica (yaws) and syphilis. O.S.R. News (Organization for Scientific Research, Indonesia), 3, 156


Lobo, J. (1949) Aspectos anatomo-clínicos da boubá. In : Anais da VI Reunião anual dos Dermato-Sifilografos brasileiros, Cidade do Recife, p. 113


Schöbl, O. & Hasselmann, C. M. (1932) Über Beziehungen zwischen Framboesie und Syphilis. Arch. Schiff- u. Tropenh.- Hyg. 36, 104


Spittel, R. L. (1923) Framboesia tropica (parangi of Ceylon), London


