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TANGANYIKA NOTES AND RECORDS

List of Articles

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Editor: F. A. MONTAGUE

Editorial Committee
SIR EDMUND TEALE
C. GILLMAN M. WILSON

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Editorial Note

IN OFFERING the fifth number of *Tanganyika Notes and Records* to our readers it is impossible to omit mention of the great loss which this journal, in common with so many other activities in the Territory, has suffered in the departure of His Excellency Sir Harold MacMichael to Palestine. It was due to his enthusiasm and to his anxiety that knowledge now available should not through our inadvertence be lost to those who come after that *Notes and Records* was founded, and throughout its life he has been one of its most active supporters. We join with many others in Tanganyika in wishing him good fortune in his new work.

* * *

May we invite the attention of readers to the printed cards and subscription forms which are attached to this number and hope that good use will be made of them?

A Tribal Museum at Bweranyange, Bukoba District

By R. de Z. Hall

IN A small hut, differing in no way externally from those of the ordinary peasants, situated at Bweranyange in the chiefdom of Karagwe, which forms the western half of the Bukoba District, there is housed a curious and interesting collection of objects, which are much revered by the tribe. They consist of—

(a) Five drums, without skins, made of copper, each with a dovetailed seam down one side and having handles made of rings of iron, attached with iron straps and iron rivets to the drums. Two drums, standing about two feet high, are cylindrical, tapering at the base into a truncated cone, thus resembling in shape the typical drums of the rest of the district. The other three, standing about two feet six inches high and about one foot nine inches in diameter at the top and bottom, are narrower at the middle than at the two ends. The skins of the past are said to have been made from the ears of elephants.

(b) Seven spears, of which two have iron shafts and copper blades. Four others, all of the socketed variety, have wooden shafts and iron blades: two of these latter are twin-bladed and one is hoe-shaped. The seventh consists of a single piece of iron with an openwork shaft.

(c) Three objects, consisting of a shaft of iron, branching into several sockets, all in a line, at the top. Long straight twigs are inserted in the sockets of two of these objects.

(d) Eight models in iron, about six inches long, of long-horned cattle, one having down-turned horns and three having humps.

(e) Two iron anvils (?) consisting of thick rods of iron, pointed at one end to enter the ground and square at the top. One has prongs projecting from the corners at the top.

(f) Two jars of the type that ginger is sold in commercially, and several broken jugs of German manufacture.

(g) The remains of a very large wooden drum, scattered about the area in front of the hut.

This heterogeneous collection is housed on the site of the dwellings of the chiefs of Karagwe from the earliest times of the Hinda dynasty until the German occupation. Bweranyange was visited by Speke and Stanley. It lies to the south of and overlooking the picturesque lake named by Speke "Windermere." To-day, the village is almost deserted, but its past importance can be gauged from the size of the old cattle enclosure, some two hundred yards by one hundred, now marked only on the upper side by some ancient barkcloth trees and on the lower side by a rampart, about four feet high, which resembles a fortification but actually represents, so I was told, the cattle dung thrown over long years, to the edge of the enclosure. Bweranyange

ceased to be the residence of the chief in the time of Ntare, father of the present chief.

At the time of the German occupation of Bukoba in 1891, Karagwe was already in a state of decline owing to the heavy mortality of cattle from rinderpest in 1890, followed by a smallpox epidemic which carried off many of the people : and to poverty was added at the same time the misrule of a regent, Ntare being only two years old on his accession in 1890. An expedition was sent against Karagwe shortly after the German occupation, as a result of which the regent was removed and another, a Munyoro, installed. In 1908 the chief began to rule alone, but at once showing signs of vicious tendencies was subjected to another regent, who established himself at Bugene, fifteen miles from Bweranyange, and Ntare was removed from Bweranyange, in order to sever the connection with the home of his ancestors, first to a village four miles away (Kibondo) and then in 1914 to Kanazi, near Bukoba. In 1915 he was hanged for treason, and in 1916 Daudi Rumanyika, his eleven-year-old son was installed, but at Bugene, not Bweranyange, with, until 1925, a Muganda as regent. Thereafter he has ruled alone, but has not returned to Bweranyange.

The physical connection of the chief with Bweranyange has thus been severed for thirty years, but the place has remained the focus of tribal life, the collection described above being guarded by groups of men in rota from different parts of the chiefdom, each group remaining on duty for about a month. At the same time, a taboo has arisen, the chief not being allowed to enter the enclosure (though his mother may), and a mythical origin has been applied to all the articles, including the ginger jars and broken jugs—they were, it is said, all made by Ndagara Luzingamchuchu Iwa'nkwanzi, a famous chief of the early nineteenth century, who fashioned them in secret at dead of night, working alone in a pit on the neighbouring hillside.

That this attitude and this mythical provenance have arisen in historical times we are fortunate enough to be able to prove from the accounts of Speke and Stanley, visiting Bweranyange in 1861 and 1875 respectively. Speke (*Journal of the Discovery of the Sources of the Nile*, p. 206) was taken by Rumanyika, the chief of the time and the son of Ndagara, to his private hut and there saw "a large assortment of spears, brass-headed with iron handles and iron-headed with wooden ones. A screen . . . . partitioned off one part of the room : and on the opposite side, as mere ornaments, were placed a number of brass grapnels and small models of cows, made in iron for his amusement by the Arabs at Kafuro." (Kafuro is three miles away and was at that time an important Arab settlement.) While Stanley (*Through the Dark Continent*, vol. I, pp. 473-4) gives a description which shows that the present-day collection is but a shadow of what it used to be, possibly owing to the depredations of collectors, possibly to neglect. He says : "The weapons and articles of brass and copper and iron were in perfect order . . . . there were about sixteen rude brass figures of ducks with copper wings, ten curious things

of the same metal meant to represent elands, and ten headless cows of copper . . . . Billhooks of iron . . . . double-bladed spears—several gigantic blades eight inches across and eighteen inches in length . . . . exquisite spears, some with blades and staves of linked iron : others with chain-shaped staves and several with a cluster of small rigid rings massed at the bottom of the blade and the end of the staff : others, copper-bladed, had curious intertwined iron rods for the staff. There were also great fly-flaps set in iron . . . . massive cleaver-looking knives . . . . and a kedge-anchor-shaped article with four hooked iron prongs.''

There were also some Arab trays, some Britannia ware and a rifle given to Rumanyika by Speke. The drums are not mentioned, though they may have been part of the battery of fifty-two drums which he mentions two pages later. A plan shows that the store for these articles, which he regards as a private museum, was at the back of the house inhabited by the chief, his hearth lying at one side and his bedroom at the other. Opposite page 475 is an illustration from Stanley's sketches, showing a number of these articles far more clearly than a photograph would and incidentally demonstrating the identity of the fly-flaps with the staves with multiple sockets still to be seen.

The readiness with which Rumanyika showed these articles to travellers and the juxtaposition of the spears, which are paralleled in other Hima countries, with Arab trays, Speke's rifle and the models of cows which Speke specifically states were made by Arabs for Rumanyika's amusement, suggests that Stanley's view of the collection as a museum is right, and that there was at that time no esoteric significance. The spears may be indigenous, but drums, not spears, were the emblem of Hinda rule—one named Nyabatamba was that of Karagwe. It is possible that Ndagara was responsible for the manufacture of the spears and allied iron objects, though the striking resemblance of some of these to some of those preserved in ''Mtesa's tomb'' at Mengo in Uganda suggests that these may have been ceremonial gifts from the Baganda, dating from the time when Karagwe came under their influence, well before the time of Stanley, who regards Rumanyika as a tributary of Mtesa (*op. cit.*, p. 455) : and that the tale about Ndagara is a myth designed to conceal this subjection, arising from the motive of pride. The models of elands and ducks are probably to be ascribed to the Arabs equally with the cows. The major objects remaining to be accounted for are the copper drums, with their technique of dovetailed joints. I have not been able to trace any parallels of East African origin : perhaps the drums also are a contribution of the Arabs to the culture of Karagwe.

Further investigation may substitute probability for these conjectures. To my mind, however, the major interest is the sociological—how a tribe, suffering a cataclysm by foreign conquest and the removal of the chief from his ancestral headquarters, has nevertheless been able to reaffirm its solidarity and connection with the ancient centre by investing a collection of objects, of mixed origin, with something of the veneration accorded to the chiefly line,

with which they are associated: and how myth has been invented, either deliberately or consequent on loss of memory, to provide an emotionally satisfactory origin, probably during the last thirty years, certainly during the last sixty.

In conclusion, I wish to express my acknowledgments to Mr A. H. White, O.B.E., late Provincial Commissioner, who first brought the existence of this collection to my notice, and subsequently afforded me the opportunity of recording it.

EDITORIAL NOTE.—It is interesting to record that in the last year or two the present chief, Rumanyika, has begun to rebuild the village at Bweranyange. The population of southern Karagwe was concentrated in 1935 as a precautionary measure against the entry of sleeping sickness from Biharamulo, and Bweranyange was the centre of one of the areas chosen for resettlement; there is thus a possibility that its former glory may in part be restored to the old headquarters of the Kings of Karagwe.

Aerial photograph of a part of the Rufiji Delta mangroves showing zonations of the forests.

Mshinzi plantation, planted 1922.

Above: left to right: Seedlings of mkaka, mshinzi and mkandaa; fruit of mpira, immature fruit of msikundazi.

Below: mature fruit of msikundazi and fruit of mkomavi.

Marking Boriti.

Mangrove Woods of Tanganyika Territory, their silviculture and dependent industries

By D. K. S. Grant

TO MANY people the term "mangroves" is obscure and even vaguely connected in their minds with mangoes. It is seldom realized that these mangroves are extensive and valuable forests ranking among the Territory's valuable natural assets. Mangrove is a general term applied to an association of physiologically specialized plants inhabiting muddy swamps, creeks, deltas and sheltered shores along tropical sea coasts, periodically inundated by the tides. The plants mostly grow to moderate sized trees and belong chiefly to the genus *Rhizophora*, though *Acanthus*, *Aegiceras*, *Avicennia*, *Bruguiera*, *Ceriops*, *Conocarpus*, *Laguncularia*, *Kandelia*, *Lumnitzera*, *Scyphiphora* and *Sonneratia* are usually represented. Close forests either pure or consisting of a mixture of two and less frequently three species are formed; the trees are mostly straight and clean with a dense leaf canopy.

The trees forming the mangrove forests of the East African* littoral consist of only seven genera, each represented by a single species. The seven genera fall into five natural orders as follows:—

NATURAL ORDER	GENUS	SPECIES	KISWAHILI NAME
1. *Rhizophoraceae*	1. *Rhizophora*	1. *R. mucronata*	Mkaka, Mkoko
,,	2. *Ceriops*	2. *C. candoleana*	Mkandaa
,,	3. *Bruguiera*	3. *B. gymnorhiza*	Mshinzi, Mchumsi
2. *Verbenaceae*	4. *Avicennia*	4. *A. officinalis*	Mchu
3. *Sonneratiaceae*	5. *Sonneratia*	5. *S. caseolaris*	Mlilana, Mpira
4. *Sterculiaceae*	6. *Heritiera*	6. *H. littoralis*	Msikundazi
5. *Meliaceae*	7. *Xylocarpus*	7. *X. moluccensis*	Mkomavi

Tanganyika is rich in mangrove forest, with a total area of approximately one hundred and twenty thousand acres. The main concentrations are those of the Tanga district extending almost continuously from the Kenya border near Jasini to south of Tanga harbour and most luxuriant on Kwale peninsula and Boma Island and in Manza bay; in the Rufiji delta, Kilwa Kisiwani, Mikindani bay and in the delta of the Rovuma river. But there are many other lesser forests on islands and creeks in between these larger masses.

Biologically and ecologically the mangrove forest is of absorbing interest to botanist, general naturalist and forester, who himself should be and often is both. Growing in water-saturated slime and often inundated for days at a time it is superficially paradoxical that several of the mangroves have zerophytic propensities, such as thick leathery leaves with few stomata for transpiration. The explanation is simple, for though there is no lack of water

*At least as far as Kenya and Tanganyika coasts are concerned: the writer claims no knowledge of the Portuguese East African coast.

in their habitat, the water is saline and by no means all available for the plants' use. Adaptations for propagation are generally highly specialized, ingenious, and most interesting. Mkaka, Mshinzi and Mkandaa are viviparous. The seed germinates on the parent tree and before parting company the hypocotyl projects at the microphyl and rapidly grows to form a long, green, fleshy dart-like body ending in a sharp blackish spike. These "darts" hang swaying in the wind and give to the tree in the case of Mkaka, which develops them longest and thickest, the appearance of being festooned with stiff dead snakes. As the seedling develops, it drops off the parent tree and falls perpendicularly like an arrow to lodge upright in the soft mud into which the sharp pointed dart penetrates to a depth varying with the momentum gained in its fall. The seedling at once takes root in the mud, the roots springing from the submerged dart end. Upward growth to enable the youngster to get its head above the level of flood tide is extraordinarily rapid. As much as twenty-four inches growth in as many hours has been observed in Mkaka seedlings. But once the leaves are clear of the average high tide, growth rate falls off. The "darts" of these trees will also float and on coming to rest on the soft mud will immediately take root and curve upwards attaining the perpendicular in a remarkably short time. The trees are accordingly not solely dependent on their crown spread for stocking the ground but can colonize distant places with their floating seedlings. The Mchu produces a light boat-like fruit in which the seeds germinate. These little boats float perfectly and are carried far and wide by every current of river or tide. Msikundazi too has a boat-shaped seed but very much larger and less buoyant.

The waterlogged mud and slime of mangrove woods is naturally very poorly aerated and in consequence the majority of species have developed wonderful appliances for breathing. Mkaka goes in for tremendous aerial root development from its stem and lower branches. The sub-aerial parts of such roots have large lenticels for breathing. Mshinzi develops fewer aerial roots from branches, but the groundroots send up erect aerating branches as in the case of Mpira, whose aerial roots spring vertically upward from the slime, arising as lateral negatively geotropic branches upon the ordinary roots. They are provided with aerenchymatous tissue and serve as respiratory organs. Mchu also throws up spiky aerial roots which project out of the mud like *cheavaux de frise*. The breathing organs of Mkandaa are somewhat similar to those of Mchu and Mpira, but they have a truncheon-like appearance and are hard and lignified. All these aerial roots, spikes and truncheons combine not only to impart a weird character to the mangrove forest but also to render progress through it on foot an exhausting and painful business, which is not at all improved either by the soft and clinging, black, slimy mud into which a man sometimes may sink to the waist or by the myriad venomous black mosquitoes whom nothing can discourage.

The several components of mangrove forest have each their optimum of locality factors, dependent mainly on the quantity of moisture present in the

mud, on the degree of its salinity and on their varying capacity to tolerate shade. Mchu, Mkaka, Mpira and Mkandaa in this order are at home in salty water, Mkomavi likes it less and Msikundazi least of all. In respect of shade tolerance Mkaka, Mshinzi and Mkandaa take first place, then Mkomavi, Mpira and Mchu with Msikundazi. The last three species in fact are highly light-demanding and shade-intolerant.

No mangrove tree can thrive on dry mud, but Mkandaa and Msikundazi are the most accommodating in this respect.

In a delta the land is never stable. Banks are scoured away by the river current and the silt deposited again at the convexities of the curving water channels. The rain-swollen river deposits its detrital load on reaching the slack waters in its delta and rapidly builds up new mud banks. Forces of tide, river current and wind, operating now together, now in opposition, in the maze-like intricacies of island and channel give rise to most complicated currents, whirlpools and backwash.

Mchu is the pioneer, well fitted for the work by its prolific crops of floating fruit. These are born on every current and ground on every square yard of new formed mud in their thousands, taking root and springing up in packed masses of willow-like saplings. Once the Mchu has appeared subsequent deposition of silt is greatly accelerated by the mechanical retarding action of the plants. In a short time a new island clothed in dense vegetation appears or a channel bank grows out in chase of its receding opposite shore.

The Mchu thickets grow and their fight for light and root space is fierce. The survivors, not one half per cent of the original stock, rapidly form a close stand of pure forest, the floor of which is ever rising by fresh deposition higher and higher above mean water level. The canopy thins out with advancing age and the mud conditions become suitable for other mangrove kinds. If the new formed forest is seaward and the water salt the first to arrive and stay is Mkaka, brought there by the "darts" floating into the Mchu stand on top of the flood tide, which, ebbing, deposits them. The Mkaka seedling takes hold and, thanks to its shade tolerance, establishes itself. But its development on account of root competition and the shade of its hosts, though much retarded, still persists. The Mchus' period of vigour is short and the invading Mkaka before long gains mastery, grows up and through the weakening Mchu canopy and eventually suppresses it. The result of its crowded situation and striving upwards to the light is the fine straight cylindrical clean stem, so appreciated by the forester. Where medium salinity conditions are encountered Mshinzi and Mkandaa invade the new Mchu wood together with Mkaka, and in sites nearing the delta apex more under the influence of fresh river water, Mshinsi may alone replace the Mchu and has an easier task in doing so since the fresh water does not well suit the pioneer.

Gradual elevation of the newly formed forest floor with decreasing moisture induces the next stage in succession. The Mkandaa then comes into its own and very gradually forms a pure forest. Msikundazi may be sought where the

water is sweetest generally farthest from the sea : it will form extensive pure stands in such places. The trees grow to heights of fifty to eighty feet. Mchu seldom exceeds forty feet, Mkaka in its optimum habitat attains eighty to a hundred feet. Mshinzi is not far behind, Mpira is shorter than Mchu and Mkandaa and Mkomavi seldom exceed the moderate height of thirty feet.

It will be clear from the foregoing description of mangrove forest that its examination on foot or from a boat and any attempt at cadastral survey are difficult, expensive and unpleasant. But a mangrove swamp is the perfect subject for aerial reconnaissance and photography. Large portions of the Rufiji delta woods have been photographed from the air while reconnaissance has been made similarly of the Tanga, Kilwa Kisiwani and some more southerly areas. Typical results of aerial photography are shown in the accompanying plate. The foliage of Mchu and Msikundazi is light and silver-green respectively, while that of the three Rhizophoraceae, Mlilana and Mkomavi is dark green. Mkandaa has a smaller leaf and more open crown while Mkomavi seldom if ever forms pure stands but occurs sporadically in mixture with its associates. These facts, taken in conjunction with the species' known, choice of locality governed by water salinity and depth of mud render the interpretation of aerial photographs a matter of little difficulty, often of certainty. For instance, if a photograph shows a dense belt of light foliage on the water-front backed by a belt of darker shade thinning out into a feathery and intermediate shade and the situation is at the seaward end of a delta, it may with fair accuracy be taken as representing a belt of Mchu merging into predominating Mkaka, which on the higher and drier in-shore zone, gives place to Mkandaa. Should the site be one of less brackish water the darkest zone will consist of Mshinzi and Mkaka mixed stands, in which the former will predominate as fresher water is approached. A dense dark strip on the water front is likely to consist of pure Mlilana, if the site is of recent deposition. It may be pure Mkaka or Mshinzi but check by observation from the land will at once dispel the doubt.

The central driest parts of extensive islands in a delta show up from the air as white open spaces, either bare of vegetation or variously covered with small bushes, which on close examination prove to be Mkandaa with a few ancient relics of Mchu. Such dry areas are called by the coast native : *jangwa*. Old deteriorating stands of Mkaka and Mshinzi are called *suini*. In Kilwa Kisiwani both *jangwa* and *suini* support vast numbers of stunted Mkaka, which are useless as poles but valuable for their fuel and bark.

The Mangrove Industry.

The following economic products are derived from mangrove forests :—

Boriti.—These are straight, round barked poles between three and seven inches in basal diameter and between eighteen and twenty-four feet long. They are cut in preference from Mkaka and Mkandaa though Mshinzi is also used. An ancient trade in boriti has existed probably since the Arabs first

secured a footing on the coastal zone of East Africa and always the boriti from the Rufiji delta have been most highly prized on account of their length, diameter and clean shape, though many other mangrove woods of the coast such as Lamu, Uombo and Ngomeni on the Kenya coast have supplied boriti and still do so. As late as about 1899 the Sultan of Zanzibar retained a right of user in the Rufiji delta, whence he derived a great number of boriti and other building material (poles) free of charge though the woods were under German control. The boriti is used by the Arabs and Persians for the construction of the ceilings and roofs of their multiple storied square houses, which surround an open courtyard. The width of their rooms and roof area is limited by the maximum length of the boriti. The trade was in the past substantially an export one and still is so, though its extent is unfortunately diminishing owing to competition of cheap Lamu poles, high local prices, the growing substitution of cheap steel and cement for wood in Arab architecture and, during the last few years, to the general world financial depression. But the Rufiji pole still retains its superiority and esteem. Fleets of Arab and Persian dhows, some small, some ocean going craft of two hundred to two hundred and seventy-five tons burden, sail south with the north-east trades in December and January with cargoes of dates, carpets, halwa, etc., which the masters trade along the East African coast and in Zanzibar. Many of these dhows then put into the Rufiji delta—the biggest lie off the mouth and send in craft of lighter draught as tenders—to load mangrove boriti, paying either in cash or dates. A large dhow can load up to two hundred and ten score of long poles. Having stowed their timber the dhows tack laboriously to Zanzibar and there await the onset of the south-east monsoon : with it they make their return voyage to the Red Sea or Persian Gulf ports. The boriti were formerly disposed of at great profit, though dhow captains now aver that the profit margin is small.

Formerly the dhow master would have to bargain with the delta natives and find his own wood cutters. The labour force would sleep on board and work for payment in dates or cloth. Often for a late arrival on the coast it would be touch and go if he obtained a full boriti cargo in time to enable him to pick up the south-east trades and get home. It appears that during all the years the German Forest Department controlled the Rufiji mangrove forests this arrangement was allowed to continue. The present Forest Department did not change the method in the dhow season of 1922 but the high German royalty rates were retained and a revenue of some £2,500 was collected. In 1923 Government granted a concession to a private company to exploit boriti in the delta and it was arranged with this company that they should cut, extract and store boriti of all dimensions at a large depot on Salale Island with deep water mooring ready for the dhow season. Thus it would have been possible for the dhows to sail in to the Simba Uranga arm, tie up at the Salale wharf, select their cargoes, load them and be off all in a few days. Masters expressed great satisfaction at the arrangement.

Though efforts were made by the company to organize their trade thus, success was never attained and mostly the old practice persisted whereby the dhow master sailed his craft far into the delta, sought his own labour and waited weeks for his cargo. He still had to pay the concessionaire's price for boriti which was far in excess of even the high German rates. A sole concession though in changed hands exists to the present day.

The company's paid local native wood cutters penetrate the dense mangrove stands, select and fell and clean the poles, and extract the finished boriti to selected dumps on the creek shore close to water. Here the Forest Department's guards count, measure and hammer-stamp them with the government mark. The work is checked by a European forester who records royalty dues and collects the revenue from the company.

Frequently the dhow's crew are engaged on a profit sharing basis and in this case amazing energy is displayed by the hardy Arab sailors. Their ship may be anchored out to sea, standing off the reef or far up the delta, miles distant from some of the scattered boriti dumps. The crew will work day and night loading a heavy open boat with the poles, rowing them often against fierce currents to the dhow, putting them aboard and stowing them below decks, while the local native looks on in indolent wonder mixed with contempt for such unnecessary energy.

The utmost watchfulness is required on the part of the company and Forest Department to prevent wholesale theft of poles. Dhows must frequently be made to unload a cargo to check the boriti over for the government mark. The following figures show the extent and value of the boriti export and bark trade during past years :—

Year	Boriti Quantity in Scores	Export Value £	Bark Tons
1921	2,309	1,303	—
1922	6,270	2,925	—
1923	6,338	3,764	7·5*
1924	2,543	1,520(?)	247
1925	5,478	3,817	3,077
1926	3,872	5,246	6,087
1927	5,483	4,777	8,094
1928	2,444	2,582	9,956
1929	6,284	6,432	3,408
1930	4,689	4,694	5,450
1931	4,347	4,265	3,607
1932	2,125	2,086	591
1933	1,723	1,040	3,115
1934	3,289	2,066	2,151
1935	3,451	1,364	3,000
1936	2,684	1,319	2,868

*The bark trade was only resuscitated in 1923.

Mangrove Bark.—The bark of several species is a well known tanning agent. That of Mkaka is most in demand owing to the fact that it is non-fibrous and so easily broken up with clubs when sun-dry. Mshinzi, Mkandaa and Mkomavi, all have a high percentage of tannin in their bark, which, however, is fibrous and difficult to break into the small pieces demanded by the trade. For this reason vast quantities of potentially valuable raw material are as yet unexploited. Mangrove barks stain leather red, which for many purposes is a disadvantage but for a few a desideratum. They are frequently used in mixture with other tanning agents not having this disability such as wattle and oak bark. Investigations have been made by the Germans and recently by the Imperial Institute for the Forest Department in tannin contents of local mangrove barks with the following results :—

German Tests.—East coast mangroves generally are richer in tannin than the west coast species, comparing as 35-45 per cent with 20-30 per cent. Samples of four barks gave :—

	Lowest %	Highest %	Average %
Mkaka	29·3 ...	40·8 ...	36·5
Mshinzi	28·4 ...	42·3 ...	35·8
Mkandaa	24·2 ...	32·2 ...	25·8
Mkomavi	26·7 ...	32·5 ...	29·8

Bark of Mkandaa and Mkomavi stained leather a yellowish-brown, which was held to be unobjectionable, while those of the first two kinds stained it red. Tests as to the effect on tannin contents of taking bark from different parts of a tree and from trees of varying age were negative, but the bark collected in the rainy season was definitely poorer in tannin than that collected in the dry season.

Imperial Institute Tests.—(Mkomavi was not tested despite the fact of its high tannin content as shown by the German tests. The reason is its sporadic occurrence, which would debar economic collection.)

Mlilana, however, was tested on account of the available quantity of this tree in accessible pure stands. It was unfortunately shown to be very deficient in tannin.

1. Mlilana	9·9 per cent.	
2. Mshinzi	43	,,
3. Mkandaa	24	,,
4. Mkaka	37	,,

Note.—(i) For Nos 3 and 4 these results closely agree with the German average figures. For No. 2, the content found by the Imperial Institute samples is higher than the maximum found by the Germans.

(ii) The tannin contents in this experiment were ascertained by the Official International Method of Tannin Analysis, employing the Proctor method of extraction, Reiss method of filtration and Hide Power Batch C4.

(iii) It appears that the American market actually prefers the fibrous bark of Mshinzi to the non-fibrous bark of Mkaka, though both are readily acceptable. Mkandaa bark contains too low a tannin content to warrant its export as chopped or broken bark, but it is highly suitable for production of tannin extract or "cutch" by a local factory, for which, however, the initial cost of establishment is high.

(iv) The full report of the Imperial Institute is available on reference to the Forest Department.

Mangrove bark locally is collected by natives who fell the trees, strip the bark and carry it to depots for drying and eventual breaking with clubs. The chopped dry product is bagged and shipped to many widely separate markets, e.g. United Kingdom, America, Germany, and the Far East.

The old moribund Mkaka trees of the *jangwa* in Kilwa Kisiwani yield good tan bark but are hard to strip and so shunned, if possible, by the native collector. Close control of these collectors is necessary for they prefer to strip the bark off a standing tree to a convenient height of some eight to ten feet, so killing the tree and leaving it to encumber the wood and hinder natural regeneration. Aside from these disadvantages the waste is naturally great. Another favourite procedure is to fell a heavy stem and remove the bark from the upper exposed side, leaving the rest, which is of course generally buried in the mud and so hard to get at until the stem is turned. Natural regeneration of the bark mangroves is generally rapid and sufficient, if suitable seed trees are left at the right espacement. All this is the care of the Forest Officer and his native guards.

The market value of bark remains at about £3 a ton but has been as high as £4 15s. The government royalty was for some years seven shillings fifty cents a ton but has been reduced to five shillings.

Timber.—At least two famous timber-producing plant families are represented by our local mangroves, namely *Verbenaceae* and *Meliaceae* by Mchu and Mkomavi respectively. But these trees let their family down, it is feared. Probably the best mangrove timber is Msikundazi. That of Mchu is light and of an undurable appearance. Those of the three representatives of *Rhizophoraceae* are very heavy and rather refractory in working up with tools. But none of the mangrove timbers have been adequately tested and they should not be condemned prematurely. One thing, however, is certain and that is Msikundazi is the only mangrove that can now be commonly found in large dimensions. Felling for boriti and bark has been practised for so long and over such a wide area, that only in a few barely accessible corners and islands do mature Mkaka and Mshinzi stands remain. This fact alone, aside from their doubtful value as timber, detracts from their interest to the lumberman. There are so many good timbers in Tanganyika that the mangrove woods may well be managed for production of poles, fuel and bark only.

Fuel.—Mkaka, Mshinzi and Mkandaa all produce fuel of high calorific value, which commands a ready market when it can be offered at reasonable prices. The Mombasa mangrove fuel market was an important one before the war and during the East African campaign large volumes of this fuel were brought to Kilindini from the Kenya coast creeks and consumed.

Native uses for Mangrove Products.—The coast native whenever he can do so uses mangrove poles for his house construction, for boat building, ship masts and oars, pig fences and fish traps, even for goat and cattle fodder (foliage of the Shore Willow, Mchu). The Swahili recognizes many separate assortments of mangrove poles, e.g. boriti = rafters, *majengo* = upright

posts for a banda, *makombomoyo*=long main rafters, *mapao*=minor rafters, *mizio*=somewhat similar but thinner rafters, *makasia*=oars, *fito*=the withes used in millions for the ubiquitous and laboriously constructed fish traps on the coast, and finally *maturuma*=knee pieces for dhow building. The annual output on gratis issue of these products is very large and must be accorded due consideration when assessing the economic importance of the mangrove forests, all of which are Central Government forest reserves.

The Rufiji delta native uses Mchu for the small canoes without which his almost amphibious existence is impossible. He chooses Mchu rather than other mangroves for its lightness and softness and ease of working and owing to its larger size, its suitability for hollowing canoes. These canoes are rudely fashioned, and their lines would bring tears to a yachtman's eyes. The navigator sits in the extreme stern which is flattened to form a seat, his buttocks almost touching the water. This must be an unpleasant situation in view of the crocodiles swarming in the delta. Crocodiles in fact frequently do sweep natives with a blow of their tails from these absurd canoes.

The Silviculture of Mangrove Woods.

For years the Forest Department has carried out silvicultural operations in the mangrove woods with the object of improving the growing-stock by substitution of commercially important species for the almost valueless Mchu and Mlilana. The technique developed consists of artificially hastening the natural succession of species described above. A planting site is chosen where the pioneering Mchu has occupied a new shore or island and developed a close pure stand of some thirty feet in height, the canopy of which shows signs of thinning out, and where already the first few invading Mkaka or Mshinzi have appeared. The mud of such a site may safely be considered to have become suitable for an Mkaka or Mshinzi crop according to its location in regard to salt water. The first operation is that of thinning the Mchu wood, particularly on the dense water front where the striving crowns lean down to the very water edge and block out all light in their efforts to get into it themselves. The edge trees are cut and drifted into the water and out to sea on the ebb-tide. The stems in the wood itself are cut at ground level and stood upright in the deep mud beside their severed stumps, where they die. The object of standing the cut Mchu in the mud is to keep the mud surface clear of the cut stems and branches which would greatly encumber the young planted mangroves and be too expensive to remove. It must be remembered that matters are complicated by the daily inundation of the planting site. If a quantity of cut stems with their top and top lay on the ground their effect would be bad enough on a dry land site, and when this waste material dries and is rolled to and fro and floated around the planting site by the tide and winds the injurious effect on soft young mangrove seedlings can easily be imagined. Accordingly the severed Mchu are stuck upright by their butts and remain upright for long enough to allow the planted Mkaka or Mshinzi to

reach a taller, tougher stage before they begin to fall among them. The dead Mchu are by then so light and withered that they cause little injury to the planted stock. Alternatively the cut stems resulting from cover lightening can be left to dry and rot on the site for a couple of years before planting takes place. They rot and dry very rapidly and can be battered up by men using thick sticks until all the poles are clean and the slash lies broken in pieces on the mud. The tide rapidly removes what will float and the remainder rots into the mud.

The next step is to collect "ripe" Mkaka or Mshinzi seedlings. A light pull on the "dart" will leave it in the hand if it has reached the stage when it would have soon fallen of its own volition. Gangs of labourers in large canoes collect tons of the plants in baskets. They collect on the flood tide when their canoes will enter the woods almost anywhere and the "darts" are in easy reach. On the bottom of the ebb the gang moves off to the planting site and marshalled by a forest guard the men spread out into a line with about a yard between one man and the next. The line advances flanked on the shore and at every pace each man plants a dart upright in the soft mud. Each man carries a basketful. It is easy work compared with dry land planting where pits must be dug and potted nursery stock raised, transported to the site and carefully planted. The young Mkaka or Mshinzi grow very quickly, but for optimum development they must be given light, which means frequent thinning of the Mchu stand in which they have been underplanted. It is of great advantage to choose for a planting site a wood of Mchu, the trees of which are about thirty feet high and some six to nine inches in diameter at the base, for such stems are just manageable by a gang of cutters, who can handle them and stand them upright in the mud when cut. Larger trees would crash to the ground when severed from the stump and be generally unmanageable. Thinnings must be made in the young stock at frequent intervals or they will become too "leggy" and crown starved. Growth is rapid for the first two years but soon falls off. A ten-year stand of Mkaka originated as described will reach an average height of some eighteen feet. It will probably take thirty to forty years to grow a number one boriti, that is a pole seven inches in diameter under bark and carrying its girth well up, with a length of eighteen to twenty-four feet.

The natural succession is from Mchu through Mkaka to Mkandaa in the salt situations and Mchu-Mshinzi-Mkandaa, or Msikundazi in the less saline or nearly sweet water sites. Natural regeneration too is usually plentiful so it may be asked why the forester should bother to plant. The answer is that natural regeneration, though pretty sure is very slow and uneven. By employing the technique described a pioneer Mchu stand may be converted in about its tenth year to an almost pure Mkaka underwood with Mchu overwood and in a further period of ten years the change to Mkaka will be complete. Left to the ways of nature the complete succession might be fifty to sixty years.

Silvicultural operations of this sort cost between forty-five and fifty shillings an acre for a five-year old established crop. Thinning every five years afterwards to the twenty-second year should not cost more than ten to fifteen shillings an acre. The final crop should be about fifteen score of number one boriti an acre, and two and a half tons of bark. Intermediate yields from the two last thinnings should be a further fifteen score of number two boriti and three-quarters of a ton of bark. At present royalty rates this total yield is assessable at Shs 121/25 : not really a high profit margin if establishment and tending costs are all calculated forward at 3½ per cent compound interest to the end of a thirty-year rotation and the forester's and forest guard's time spent in supervision is taken into consideration. But the mangroves have other besides purely monetary value and cannot be allowed to deteriorate through heavy exploitation unaccompanied by regeneration works. The Forest Department has not the necessary staff or funds to replant wherever felling occurs and consequently large tracts of mangrove forest are closed to exploitation for periods of recuperation by natural regeneration.

Life in the Mangrove Swamps.

The Forest Department has but one forest station located in mangrove forest, namely Salale, in the Rufiji delta. The house is a fair one and situated on Salale Island, one of the few larger tracts of land in the delta permanently clear of the spring tides. The island supports a native village, a few Indian and Arab shops and some good agriculture with mango and coconut groves. A walk of about a mile can be indulged in without changing direction. There is even a landing ground now for aircraft. This was made by clearing a *jangwa* adjacent to the village. Life in the delta is practically an amphibian one. The forester is entirely dependent on river craft for his travelling. A powerful motor boat is a necessity. In the days before the department possessed one, all safari was done first in a dug-out canoe and subsequently in a five-oared sailing gig. As indicated earlier in this article bewildering currents are set up by interaction of river tide and wind operating among the islands and tortuous channels of the delta. Long weary hours with the boat tied to an overhanging mangrove tree or anchored in the arm would frequently be passed in waiting for the current or wind to favour, and bitter hours of toil at the oars were put in by the cheerful native boat's crew when necessity caused the forester to travel against wind and water. Frequently one mile would be covered in a three-hours pull under scorching sun.

It was necessary to rise at any time of light or darkness to avail oneself of the tide. The power boat, however, changes all that.

Life is not unpleasant in the delta, especially during the cool months from May to September. Mosquitoes are unbelievable but there are few anopheles, while a good net and mosquito-proofed quarters obviate much of their annoyance. When tramping the swamps it is wise to wear an ancient pair of long pants tucked into gum-boots and shirt sleeves buttoned to the wrist. With

face liberally anointed with bamba oil, you can keep the mosquito horde at bay. But one must have hobbies for the evening. If you are a nature lover there is much of interest. The bird life is profuse and varied; the curlew give good sport for the gun. You can bathe on the coast, fish and shoot crocodiles and hippopotami. Occasionally the monotony of a long boat trip is broken by an old hippo bull attacking the launch. The gig was once holed by a hippo and had to be run rapidly ashore. Excellent crabs can be had by those who know the trick of catching them. The oysters and prawns are excellent.

Another source of interest is the visiting Persian or Arab dhow. The masters are usually courteous and excellent hosts, who expect you to board and visit them. They will show you over their primitive vessel and produce a rusty sextant and illegible charts which are never consulted. They press on the visitor gifts of Persian pottery, halwa or dates and it is difficult to know what to do in return.

Mamalian life is rather scarce in the mangrove woods and is limited to bushbuck, wild pig in the drier parts and bedraggled and sorrowful faced Sykes' monkeys. These wait to quench their thirst till the bottom of the ebb when the river water is in preponderance and just drinkable. Clinging to the extremity of an overhanging branch they drink in terror of the lurking crocodile, who not infrequently gets them. How these monkeys reached some of the more isolated islands is a problem, why they remain is obvious.

At one time the possibilities of sport included a shot at wild cattle on the Kiomboni Island. This herd originated in a few domestic beasts that strayed into the *jangwas* during the war, were unherded for several bovine generations and gradually became semi-wild.

Altogether a spell of duty in the mangrove forest offers unusual experience and surroundings and is an education in natural history and forestry for which no one is likely to be any the worse.

Land Tenure in Usukuma

By B. J. Hartley

Tribal Aspect of Land Tenure as Affecting the Sukuma People.

IN CONSIDERING the tribal aspect of land tenure in Usukuma it should be remembered that the name "Wasukuma" is of comparatively recent origin in its application to the people of East Shinyanga, Maswa District, Kwimba District and the Mwanza mainland east of Smith Sound.

Usukuma means "north" in the language spoken by the people of these areas. Travellers passing through Unyamwezi in the early days were referred to the country of Usukuma—the north, so the name became used until the whole area from Shinyanga to the Lake—between Smith Sound and the Mbalangeti river—became known as Usukuma; the people took the name of the country and were called Basukuma or Wasukuma.

There appears to have been no previous name for the people as a collective unit although the people of Ukerewe call them Bagwe and the Musoma people call them Bakiliti. Among the people themselves those living in the north are called Basukuma, in the south, Batakama, in the east, Banakia and in the west, Banyamweri. Amongst the lake-shore peoples the name Bagwe is generally known and accepted by the people as a name for themselves.

It is incorrect to speak of the Wasukuma as a tribe; they are with the Wanyamwezi a language group of the same type as that formed by the Bajita, Bakerewe, Bakara, Bazinza, and Basiba groups.

The land then may be said to be occupied by the Sukuma group of people in the above-mentioned areas, of Mwanza, Maswa, Kwimba and Shinyanga.

Members of a certain clan do not occupy areas of land to the exclusion of other clans and the members of the three principal clans of Babinza, Bakwimba and Basiha are to be found throughout the hinterland chiefdoms.

Complete strangers such as Bashashi, Bazinza and Bakerewe are welcome and receive full rights in society and land.

Subject to the rule of the Mandatory Power any particular chiefdom in Usukuma may be said to be the property of its ruling house, the "Benekele Isi" (owners of the country), while the trustees for the chiefdom are the Banangoma or the Bagonghogongho, together with the Wisukuru.

The Banangoma may be of special families who can never rule but retain the trusteeship. The Bagonghogongho are elders selected from the Wisukuru, a product of the paternal line in the matrilineal succession followed in all chiefdoms of the hinterland. The name Banangoma is commonly used from Sengerema to the lake; south of Sengerema and in Sengerema the Bagonghogongho and the Wisukuru perform the same offices as the Banangoma do elsewhere.

As mentioned above, the Banangoma and the Bagonghogongho are the trustees to the chiefdom and are supposed to be responsible for such matters as the selection or removal of the chief—formerly a sacerdotal head who would soon lose his employment should drought, locusts or other troubles visit the chiefdom for any length of time.

Members of the ruling house and of the special families of Banangoma may be said to be the only persons with a genuine proprietary interest in the chiefdom and its lands. The ordinary headman and cultivator have no need to worry. The headman hopes for a heavily populated village and its corresponding pay and perquisits; the cultivator can move at will and be sure of a welcome and land in the areas where settlement is taking place.

The above is particularly true in some areas of the Sukuma country south of the Simiyu river. North of the Simiyu there is more attachment to the chiefdom and its lands while near the lake, land is often held for long periods on account of its favourable situation and fertility. Behind all this there is the attachment of headmen and elders and others who represent the people to their own country; these people are unfortunately in minority but make their presence felt in the councils of the people. It should be grasped though from the outset that the ordinary cultivator—the common man—is in most parts of Usukuma ready to move to any other Sukuma area outside his village where he thinks good soil and grazing are available.

Boundaries.

Chiefdom boundaries in Usukuma, fixed by conquest, treaties or by unchallenged rights are usually defined by rivers, hills and other permanent landmarks.

The reason for claiming large areas of uninhabited country, as found in the chiefdoms of the south and east, is probably due to the desire for private hunting grounds for the chiefdom. Ntussu is said to have once fought Ushashi for the hunting rights on the Mbalangeti river, and there a boundary was established.

Major land disputes concerning chiefdom boundaries naturally come to the Government for settlement to-day, thus avoiding the series of petty tribal wars formerly required to settle such matters.

Village boundaries are settled by the chief and advisers, taken from the elders and headmen, while minor disputes between villages concern the headmen and village council of Basumba *batalé* and *banamhalla*—elders.

Local land administration—concerning such matters as the division of new lands, unoccupied lands, disputes over previously occupied land and house plots and so on—is undertaken by the Basumba *batalé*, who have the *banamhalla* to refer to in difficult cases. It is not customary for the headman to take a leading part in such matters.

Acquisition of land by the community. The people known as the Wasukuma are to-day subsisting on the results of cultivation and stock keeping, which

two branches of husbandry are, unfortunately, at present almost entirely divorced.

To these people the tsetse fly is a bar to land settlement because the community has no desire to move without stock. Where one finds bush villages devoid of stock, as in Meatu or on the Simiyu river, one may be sure that the inhabitants are undesirables—*balogi* (sorcerers)—or are there for the hunting and fishing only.

It is customary for persons intending to settle in new areas, to select choice pieces of land and perhaps crop them some time before they actually move in and build their houses.

The intending *mzengi* will go into the bush and mark out a good piece of land on the highly prized *malago* riverine soil, or the better drained parts of an *mbuga* valley soil, where heavy sorghum crops can be obtained with the least amount of effort in cultivation.

The *mbuga* field selected by the *mzengi* will commonly be marked by a line of sticks on which the large white shells, *manonga*, are impaled. These will mark his boundary. The *malago* fields on the edge of large streams will probably carry a corridor forest and here a few trees will be felled to form a rough boundary fence.

The well drained higher lands or *igunguli* on which the settlement will be made are often marked by a few ridges of cassava or by lines of the commonly used boundary plant *magaka*, an aloe. When the time for settlement draws near—usually at the end of a harvest—the house site will be marked by a stack of building poles placed in readiness for the building.

It is usual for settlement to take place in a communal manner. A settler will be helped, by the Basumba *batalé* of the village, to build his hut and to take some of his goods to the new settlement on the edge of the bush. Persons who go away and build by themselves with plenty of land round them, are regarded with suspicion by the rest of the community.

When settlement takes place after a bush clearing organized by the Government, the settlers are commonly provided with poles cut for them by the bush clearers; they go on to the land and build themselves.

The sites chosen for the houses in a settlement will depend on the nature of the country, particularly as regards such factors as soil, water, enemies and wild beasts.

In the Maswa chiefdoms which border on Masailand, the houses will commonly be built about a granite torr which would be of use for defensive purposes against the raiders. Where dangerous game are feared the huts are built close together in the early years of settlement. Later when the people have gained confidence and the bush is further away, the huts will be moved apart until the village takes on the usual form of a collection of *kayas* each surrounded by its Euphorbia hedge.

Without the assistance of a chiefdom bush clearing effort, as commonly provided to-day, one may well imagine that progress is fairly slow. Gradually

the bush is rolled back, tsetse fly becomes less prevalent, people come in and build, the village boundaries are roughly defined and a headman is appointed to look after the community.

Applications and claims to land are referred to the Basumba *batalé*. Claims to land must be substantiated by the customary boundary marks, or better still by clearing and cultivation.

Where clearing or cultivation of a piece of land has taken place it may be assumed that the land, particularly if fertile, will remain the property of the person who cleared it first for as long as he or his family may care to use it. *Mbassa lya ndugu wone ou tema kunu*, "My family's axe cut here," is a common saying when substantiating a claim to land.

Extravagant claims to large pieces of land which have been neither cleared or cultivated are uncommon and in any case would be dealt with in a cursory manner by the Basumba *batalé*, who would allot the intending settler an area of land which they considered sufficient for his needs, and give the rest to other settlers requiring plots for their cultivation.

At a certain stage in the history of the village there should be found an optimum number of cultivators who have ample good land and even perhaps grazing. To-day this desirable stage is soon passed owing to the rush of newcomers anxious to obtain land free from witch-weed—one of the most potent factors in causing the movement of the Wasukuma at present.

Let us imagine that all the good land, particularly heavy land, has been taken up and is under cultivation by the settlers. Soon the news of heavy sorghum crops spreads to the witch-weed infested areas; people who have had poor crops flock in to hoe for those who are rich in corn, and to try and share in the fruits of the new soil. The *manangwa* (headman) and Basumba *batalé*—keen to get as many villagers as possible—will see that they have some sort of a house plot, and for their cultivation they must rely on poor pieces of previously unwanted land.

These cultivators of poor land in a village are the first to suffer in a bad year; they constitute a serious problem and cause famines in years when the farmers of good lands would only suffer a shortage. The villages of south Mwagalla along the Sanga river form striking examples of this over-crowding to-day.

Nhonga mbele akamwaġa minzi mwiru, "The first person (to the well) drinks clear water," is a Kisukuma proverb well applied to the settlement of land in Usukuma.

When bad years come along and the witch-weed pest is introduced, the poorer members of the community will move out again and so the population : sorghum ratio adjusts itself once more.

Land division and stock. It may be taken for granted that almost any new village area becomes over-stocked as soon as tsetse fly has been removed. It is undoubtedly a fact that stock and their grazing requirements are left unconsidered when land division takes place in a new area. It is only later,

when the bush-edge grazing is a distance away, that the provision of pasture is considered in a village.

Land tenure for the individual in Usukuma may be said to be based on the rights of the *tongo* or house plot, with its lands. The house plot has usually an area of cultivable land about it and this is included when the expression *tongo* is used. The house plot has attached to it the land cultivated by the occupants. In the earliest stages of a village one finds the area occupied with house plots and waste land—commonage.

The big cattle owners in Usukuma follow the early settlers into areas where commonage is likely to be plentiful; as the bush-edge moves, so they move. Later, when the bush is far away and *matongo* have fallen vacant, good witch-weed infested land which will grow grass lies fallow and such land may be divided into *ngitili* or grazing reserves. The *ngitili* form part of the rights of the *tongo* in a village.

Having described in a general way the development of the village, let us now consider in particular the rights of the *tongo* when held by an occupant.

The house. The house is nearly always built by the village community and therefore remains the property of the Basumba *batalé*. In certain areas—Ntussu and Usmau—a person who has occupied a house for a long time, may be given permission to remove the building materials of a house to another village, within the chiefdom. If he owns two houses he will remove the poles from one and leave the other to the village.

The occupant of a house in Usukuma holds the rights to use lands which may be said to be particular to the house plot. The lands which are attached to the house plot and are available for the use of any occupant, are described below.

The 'Mwitunu.' About the house one commonly finds small areas enclosed by Euphorbia hedges; these enclosures known as *mwitunu* are used as paddocks for cattle or as gardens for the cultivation of special crops such as early maize, tobacco and so on.

The 'Migunda ya itongo.' The land about the house is included in the expression *tongo*. These lands are usually of fertile sort and suited to the cultivation of the light-soil crops such as groundnuts, potatoes and cassava. These fields about the house are generally permanent fixtures with the house and they are not disposed of to the relations or to other persons when a plot is left by a cultivator.

The heavy land, 'mbuga' and 'malago' fields. These are usually the most valuable of the soil cultivated by a villager. Fields of *mbuga* or *malago* are usually some distance from the house and are therefore not included as being part of the house plot. In many parts the fields of *mbuga* and *malago* are passed on to friends or relations or sold by a person leaving the village. The house plot is then left without any heavy land of value and the incoming cultivator is forced to buy or borrow a field of such land or confine his attention to the poorer types of heavy soil and his light soil fields about the house.

Fallows. Fallows of any sort on the lands attached to the house plot are described as *malali.* Fields going fallow are not lost to the house plot. They may be used as grazing reserve in some areas, or the grass and weed growth which they provide may become commonage, but later they revert to the house plot of which they form a part.

The grazing reserves, 'ngitili.' The origin of grazing reserves, *ngitili,* is of some doubt. Some say that the marking of these reserves is an ancient custom; others affirm that the system was started in German times.

The *ngitili* is sometimes an area of permanent grassland, or more commonly an area of temporary grassland or weedy fallow which is marked yearly. Where land which will grow grass is plentiful, as in *kiduha* infested areas such as western Maswa, one finds the *ngitili* becoming a considerable factor outside the ordinary fallows belonging to a *tongo.* It is in such places that the *ngitili* system becomes most highly developed, and even poor people without stock own *ngitili* and rent or give the grazing to relations and friends.

The *ngitili* goes with the *tongo.*

Commonage. The occupant of a house in the village is generally entitled to commonage in the common land of the village and in any other village where he wishes to send his stock. In some places commonage becomes particular to a village, as for instance in Ututwa, where a general reserve of grazing and crop residues may be made for the common use of the stock in the village.

It is perhaps opportune at this stage to discuss the very wide term commonage.

Commonage may be said to include all wastes scrub, or land unallocated to the various *matongo* in a village. Commonage also may include crop residues in the fields; it includes aftermaths and early grazing on the *ngitili.* The year-round areas of commonage are usually of poor carrying-capacity, in fact, in most areas commonage of a permanent sort is only to be found in poor hard-panned or stony soils which support scrub such as the unpalatable *mhushi, Acacia fischeri,* or a few browse plants such as the *mtinji* or *lula mbuli.* In general one has to approach the bush edge or the large *mbuga* systems to find good grazing on commonage.

Other Rights.

Water rights over nearby springs and waterholes sometimes follow the occupancy of a house plot.

Plantations and fuel reserves. In heavily populated areas far from the bush one sees individually owned plots of timber—usually *Acacia fischeri*—used for the extraction of building poles and fuel.

Sale and rental of land belonging to the 'tongo.' It has already been mentioned that valuable lands such as the *malago* may in certain areas be sold or given away when a person leaves his *tongo.* It is not customary to sell types of land other than the *mbuga* or *malago.* The purchase price of a good *ilago* for cultivation is, however, only nominal, and an area of one and a half

to two acres changes hands in southern Maswa for the payment of a bull or a few goats.

Ngitili grazing reserves are held in western Maswa and other areas by poor people who own no stock. The *ngitili* is usually of a temporary character and rented for the grazing reserved against the dry season. The payment for the use of an *ngitili* is only nominal generally, though up to five goats is said to have been paid for reserves of two to three acres, in western Mwagalla, in 1934.

Sale of crop residues commonly regarded as commonage. In bad years crop residues, particularly of a sorghum crop, become of considerable value. Crop residues then are used individually instead of communally, and those without stock hand the sorghum stover on their fields to relations or friends, or they will sell for a few goats to those requiring fodder.

Sale of trees and plants. Fruit trees and plants such as mangoes and bananas are sold by the out-going holder of a house plot. Wood and building poles are of course sold from the plantations on the lands of an individual.

Custom and Law regarding Changes in Occupancy of the *Tongo*.

Leaving a Tongo. Reasons for movement in Usukuma are generally concerned with the productivity of the land or with the well-being of the individual.

It is a customary belief that no person becomes sick or dies in Usukuma without being under the influence of *balogi* or sorcerers. When a person falls sick the *mfumu* or doctor is consulted; the doctor will endeavour to cure the sickness and will also try and discover who caused it. The *mfumu* will commonly use the Chicken Oracle of the *Bachemba wa ngoko*, chicken cutters, to discover the cause of illness. He will inform the sick person or his family that so-and-so is practising witchcraft and causing the sickness. They are advised to move to a certain area, or simply to move, in order to escape the influence of the *nogi*.

In order to avoid the sight of the sorcerer, movement in such cases is made under cover of darkness; the waking village finds the hut fastened and deserted. Later, relations will come to take away the grain store and other articles which may have been left behind.

A person leaving through such causes as poor crops or grazing will take leave of his friends and the Basumba *batalé* and leave in a comfortable manner.

Entry to a plot. A vacant house on a *tongo* receives a special description; near the lake it is referred to as *Noomba isaka*, in the south *Noomba ifuliga*. In over-crowded areas a house will not remain vacant for long. Perhaps people have been waiting for the *tongo* to fall vacant, and as soon as it becomes available a person wishing to enter will approach the Basumba *batalé* and ask their permission. If he receives permission he will probably establish his claim by hanging up a *lusungo* (string sling, for holding special pots) in the house.

In the south it is not customary to place the *lusungo* ; the house will be swept out and perhaps a cooking pot placed inside as a sign of occupation.

Eviction. Eviction of a person from the *tongo* is customarily decided on by the *Banamhalla* and the Basumba *batalé*. A person who repeatedly offends the community and its rights will be evicted. He will be told to gather up his goods and leave to find a home in another village. Should he delay he will be helped to move in no uncertain manner.

Balogi (sorcerers) were in former times beaten to death or drowned : to-day they may escape this and are simply evicted. But news travels, and these unfortunates may travel from village to village and be refused a house until their final resting place will be the bush village.

Fragmentation of a tongo. Fragmentation of a *tongo* occurs in over-crowded areas and may occur until the plot becomes just sufficient to support the cultivator ; fragmentation rarely proceeds beyond this stage though the process would go further should the Wasukuma adopt a system of fertilizing on their land.

Fragmentation commonly starts when *tongo* holders supply their sons and sons-in-law with a portion of the family *tongo*, on which to settle.

The *matongo* lose their identity when they are abandoned for long periods, as in witch-weed stricken areas. The house falls down and lands are taken over by the remaining villagers to whose *matongo* they will become attached.

In the foregoing pages a description is given of the present conception of land tenure in Usukuma.

The subject is an important one and should be studied by all those who may be concerned with settlement, bush clearing and other agricultural matters. One may say that the present conception of land tenure is a sound one, safeguarding the rights of the individual as well as those of the community.

The task of the administrator and agriculturist will be to effect a more healthy distribution of population and to encourage consolidation of each individual's holding by exchange of plots, enclosure, and so on, and these problems will all be over-shadowed by the great enemy to stability in land—soil erosion. The right to hold land should be largely based on the ability of the individual to preserve his holding from soil and fertility losses.

GLOSSARY OF SOME KISUKUMA WORDS USED.

Igunguli	=	High village lands.
Ilali	=	Fallow.
Kaya	=	Kraal.
Kiduha	=	Witch weed.
Manonga	=	Snail shells.
Magaka	=	A wild aloe used as a boundary plant.
Manangwa	=	Village headman.
Mhushi	=	*Acacia fischeri.*
Migunda gao mitogolo	=	Field with soil of light grey clay.
Migunda gao ikurusi	=	Field with soil of red loam.
Mwitunu	=	Enclosure about the house.
Ngitili	=	Grassfield (individual ownership).
Tongo	=	House plot.

Un Voyage de Marseille au lac Tanganyika en 1906

By Father Thomas

White Fathers' Mission, Kala

IL Y A une trentaine d'années un voyage de Marseille au Tanganyika ne se faisait pas aussi facilement qu'aujourd'hui. Pourtant, il constituait déjà, à cette époque, un vrai record sur celui fait, en 1878, par les premiers Pères Blancs, puisque ces derniers, partis des Marseille le 24 Février, n'atteignirent le lac, à Ujiji, que le 29 Janvier 1879. L'itinéraire d'alors était : Bagamoyo-Tabora-Ujiji. Les premiers missionnaires firent ce long voyage à pied, escortés par une petite troupe de soldats noirs qu'ils avaient recrutée à Zanzibar. C'est assez dire que, en ces temps-là, la question des fortes bottes était autrement importante que celle des souliers de tennis. Les voyageurs étaient bien partis de Bagamoyo chacun monté sur un âne mascate, mais l'histoire—la vraie et l'impartiale, a conservé dans ses archives qu'aucun de ces coursiers à longues oreilles n'avait amené son cavalier jusqu'aux rives du Tanganyika. Tours laissérent leurs os le long de ce terrible chemin, si bien décrit par Stanley dans son fameux livre "Comment j'ai retrouvé Livingstone."

En 1906, un voyage de Marseille au lac Tanganyika était près que une partie de plaisir comparé à celui de ces premiers missionnaires, un quart de siècle plus tôt. On m'a demandé d'évoquer ces souvenirs de voyage, déjà vieux de trente ans, m'assurant qu'ils ne manqueraient pas d'intéresser les voyageurs d'aujourd'hui, qui, de Dar es Salaam à la côte du lac Tanganyika, n'ont qu'à s'asseoir dans un wagon très confortable de la ligne Océan-Indien-Tanganyika—et, pour m'y décider, on m'a même dit que "l'Histoire" me demandait ce petit récit, et que, par amour pour elle—pour l'Histoire—je devais m'exécuter. Je vais tâcher de le faire, mais brièvement, et sans partager l'opinion que l'Histoire m'en devra une particulière reconnaissance.

Parti de Marseille le 4 Août 1906, j'arrivai sur les bords du Tanganyika, à Karema, le 15 Octobre . . . . un vrai record, je le répète, sur les premiers Pères Blancs de 1878.

Lorsque dans la soirée du 4 Août je franchis la passerelle de l'*Admiral*—un beau bateau allemand tout neuf qui faisait son second voyage autour de l'Afrique—je ne m'arrêtai pas trop à la pensée que je venais de "couper les ponts" entre la France et moi, et pour une période d'une dizaine d'années au moins, car je me trouvais en compagnie de neuf autres missionnaires, tous jeunes comme moi, et nous étions tous bien persuadés—la jeunesse a tant de belles illusions !—que nous n'allions faire qu'une bouchée de toute la région des Grands Lacs Africains.

Mes souvenirs de la traversée elle-même sont assez rares, quatre ou cinq seulement ont servécu à ces trente années passées et puis en ces temps-là ce n'était pas la mode—pour nous au moins—de prendre des notes de voyage. Ce dont je me rappelle fort bien c'est que tout le personnel-servant du bateau—surtout les garçons de sallés et de cabines—était comme le Maître-Jacques d'Arpagon, il faisait tous les métiers, surtout celui de musicien. La fanfare du bord, trés bien constitué, ne comprenait que le personnel domestique du bateau. Tous les soirs, avant le coucher du soleil, toute cette fanfare, réunie autour de son chef d'orchestre qui n'était autre qu'un des stewards du bord, nous donnait de belles auditions.

Des différents personnages qui voyageaient avec nous je ne me rapelle guére que d'un tout jeune homme—présque encore un enfant—un portuguais, fils d'un commandant de *Prazo* au Mozambique. Ce jeune homme nous amusait beaucoup par sa loyale franchise dont il nous donna tout de suite un échantillon : il nous dit, sans ambages, qu'envoyé par son père pour faire ses études dans un lycèe de Lisbone, l'auteur de ses jours mécontent d'apprendre qu'il venait encore d'avoir un "trés mal" à son examen de fin d'année, l'avait rappelé par dépêche en lui annonçant que la seule carrière que s'offrait maintenant devant lui était celle des Prazos, et qu'il allait commencer son apprentissage dans les bureaux du papa.

De Marseille à Mombasa, où nous devions débarquer, nous ne fîmes que deux escales, à Port-Saîd et à Aden. De ces deux localités je me rapelle, pour la première, cet essaim de vendeurs et de jeunes rabatteurs qui nous accrochaient et nous poursuivaient avec persévérance . . . plus tenaces que la tsetse-fly dans les forêts du Tanganyika. Je n'ai jamais oublié non plus ce fameux égyptien prestidigitateur, venu sur le pont du bateau, et qui nous stupéfia littérallement par ses extraordinaires tours de passe-passe. J'ai revu ce même particulier, vingt-sept ans après, en 1933, assez vieilli, comme de juste, mais toujours aussi habile dans son art "d'épater" le bourgeois et la bourgeoise, dans l'espèce les passagers de tout âge et de toutes conditions.

A Aden, je me revois encore cherchant la résidence des missionnaires capucins et que je n'arrivai à découvrir qu'après avoir tourné un peu partout, et pendant toute une heure, dans un vrai labyrinthe . . . et cela en plein midi, par une chaleur comme savent la dispenser la mer Rouge et le désert, à la fin du mois d'Août. Le simple verre de soda glacé—sans mixture—que m'offrirent les braves moines me parut le plus délicieux drink que j'avais bu jusqu'à ce jour.

Comme tout le monde nous reçûmes le "baptême de la ligne" en passant sous l'équateur. Mais comme nous étions reconnus pour des chrétiens suffisemment "éprouvés et confirmés," on ne nous fit subir qu'une petite partie des cérémonies, et la plus bénigne : une petite douche dans le cou, avec une seringue de pharmacie.

Il y avait aussi, sur l'*Admiral*, un groupe de quatre ou cinq étudiants allemands qui, tous, portaient sur la figure, des taillades de coups de sabres

et des marques de pointes de fleurets. C'était la mode en ce temps-là : tout étudiant allemand, digne de ce nom, devait être balafré, au moins à l'instar d'une enveloppe de football. Ceux-là étaient donc de vrais étudiants d'outre-Rhin. Ces jeunes gens, tous des fils à papa, avaient fait croire à leurs familles que, pour compléter leur éducation, ils devaient faire le tour du monde et, pour commencer, le tour de l'Afrique. Mais, apparemment, ces étudiants n'étudiaient rien du tout, ils passaient le plus clair de leur temps à s'amuser . . . et à jouer des tours aux passagers. Voici un échantillon de leurs farces : avant d'arriver au cap Guardafui ils firent afficher dans toutes les salles de réunions, sur les ponts et dans les couloirs que, à telle heure de l'aprés-midi, on arriverait en face d'une petite île très giboyeuse et que, par faveur du capitaine, le bateau stopperait pendant quelques heures afin de permettre aux Nimrods de s'illustrer par quelques beaux exploits cynégétiques. Des prix "en argent" étaient promis aux plus habiles parmi les chasseurs. Ceux des voyageurs qui avaient leurs armes "en transit" déclarérent qu'ils ne voyaient pas, à leurs grands regréts, la possibilité de retirer leurs fusils qui étaient au fond des calles et scellés du cachet du transit. Les étudiants, toujours avec un sérieux imperturbable, les rassurérent en leur disant que le Capitaine, toujours par faveur spéciale, permettait, pour ce qui concernait les caisses d'armes, de briser le sceau du transit. Et de fait, à un moment donné, dans l'après-midi, le bateau ralentit sa marche et tout le monde crut qu'il allait stopper. La chaloupe à moteur, qui devait transporter les chasseurs sur la fameuse île giboyeuse, se balançait déjà aux crochets des palans, et la passerelle elle-même commençait à s'abaisser . . . et une demi-douzaine de Tartarins, armés jusqu'aux dents et guêtrés jusqu-aux cuisses, assujétissaient leurs casques avant de descendre dans la chaloupe. Alors un fameux coup de sirène vint mettre fin à la farce des étudiants . . le bateau reprit de la vitesse, et nos Tartarins, revenues à la réalité, rapportérent leurs fusils dans les calles de l'*Admiral*.

Arrivés à Mombasa je me rappelle que dans le canot qui nous transportait à quai je me fis "lecturer" par le Père Procureur comme je ne l'avais jamais été depuis les jours, déjà lointains, de mon école primaire. Quel crime avais-je donc commis? J'avais tout simplement enlevé mon casque . . . et il n'était pas quatre heures de l'après-midi !

A Mombasa nous passâmes quelques jours à nous promener dans la ville. Là encore, mais moins qu'à Port-Saïd, les boys des commerçants arabes et indous, voyant à notre tournure que nous étions des nouveaux débarqués, nous poursuivaient . . . et nous invitaient aimablement à entrer.

Pour tout le parcours du railway Mombasa-lac Victoria je ne me rappelle guère que de deux souvenirs : d'abord le paysage magnifique, féérique plutôt, que nous apercevions à une portée de flèche de notre wagon . . . c'était, je crois, un peu avant d'arriver à Nairobi, et la gare du secteur, une gare bien nommée, s'appelait "Escarpement." L'autre souvenir inoubliable fut le spectacle de ce véritable Zoo naturel qui s'étend aux environs de Nairobi : du gibier partout, et du gibier de toutes les espèces, pas sauvage du tout et qui regardait

passer le train sans s'effrayer et sans changer de place. Seules, les autruches prenaient un petit trot pour aller considérer le convoi d'un peu plus loin. On pouvait même apercevoir quelques dik-diks tout près des bâtiments de la gare dependant de Nairobi.

Ce qui parut moins joli, mais tout aussi nature, ce fut le costume, par trop sommaire, des Kavirondo. Ce costume était tout "végétal :" une touffe d'herbe par devant, une autre par derrière, et le tout retenu par une simple corde qui faisait fonction de ceinture.

A Port-Florence, au nord du Victoria, nous trouvâmes bien un petit hôtel qui consentit à nous servir nos repas . . . mais pas à nous loger. Du reste cet hôtel n'était qu'une simple barraque. Ce manque de logement ne tira pas pour nous à conséquence : nous avions des tentes et nous les plantâmes dans la cour de l'hôtel. C'est donc là que nous fîmes notre apprentissage du camping. Dans cette cour d'hôtel il y avait de tout, mais surtout des chèvres, des poules, des canards, des oies, des dindons et même des pintades. Tout ce menu peuple ne s'écartait guère de la cour de l'hôtel . . . jamais plus de cinquante yards. Lorsqu'une chèvre, par exemple, voulait faire usage de son indépendance, comme la chèvre de Monsieur Séguin dont parle Alphons Daudet dans ses "Lettres de mon moulin," elle était ramenée dans la cour, en vitesse, par deux gardiennes vigilantes qui n'étaient autres que deux grues couronnées. Et chaque fois que ces fidèles gardiennes avaient remis l'une ou l'autre de leurs administrées dans le chemin de la discipline, elles en témoignaient leur orgueil légitime par un pas de parade, et quelquefois par une contre-dance.

Après deux ou trois jours passés à Port-Florence nous nous embarquâmes sur le Victoria à bord du *Winifred*, un beau bateau de 500 tonnes et qui avait un frère jumeau, "le Cybil." Je ne pense pas que, à l'époque, un autre grand lac africain eût pu opposer au Victoria une aussi belle marine. De Port-Florence à Mwanza, au sud du lac, nous ne fîmes qu'une escale, à Shirati, petit poste allemand sur la frontière des deux colonies. Nous ne vîmes là que quelques soldats noirs commandés par un sous-officier allemand . . .et une quantité de prisonniers, car Shirati était surtout une prison. C'est là, pour la première fois, que je vis des prisonniers à la chaine. Le sous-officier qui commandait là avait du goût et il savait faire travailler ses prisonniers, car il avait réussi à faire de ce petit cap de Shirati un véritable jardin d'éssai : arbres, plantes et fleurs de toutes sortes voisinaient dans une parfaite harmonie.

Nous arrivâmes à Mwanza dans les premiers jours de Septembre. Les Pères Blancs n'avaient là encore ni mission, ni procure, mais une simple succursale. La station de mission la plus proche était Kamoga, à vingt kilomètres au sud-ouest. Mais, lors de l'arrivée des missionnaires venant d'Europe, un Père de Kamoga venait à Mwanza pour aider à organiser la caravane vers l'intérieur, jusqu'à Tabora. Mais les indous étaient là comme partout, et ce fut un certain Ali-Wisram qui nous organisa, dans l'espace de deux ou trois jours, une caravane complète pour jusqu'à Tabora . . . une affaire de quinze jours de marche.

La fièvre ayant éprouvé assez sérieusement les missionnaires des caravanes précédentes, le Père de Kamoga voulut que chacun de nous eût sa machilla escortée de six porteurs. Cette mesure contraria bien un peu l'idée que nous avions de nous lancer dans la brousse africaine à pleines "foulées de bottes". . . mais, nous souvenant que l'obéissance nous avait été enseignée au grand séminaire de Carthage, nous nous laissâmes faire. Je voudrais bien savoir si, dans l'histoire des caravanes, il y a eu de machilliers aussi heureux que le fûrent les nôtres durant tout ce voyage. De Tabora ils reprirent le chemin de leurs villages avec leur full pay en poche, et sans avoir porté l'un de nous seulement pendant un mille.

De Mwanza à Tabora nous rencontrions tous les jours plusieurs caravanes de commerçants arabes et indous, car à cette épopque tous les transports pour Tabora, Ujiji, Karema, et même pou la côte ouest du Tanganyika, partaient de Mwanza. Et cela dura jusqu-au début de l'année 1914 époque à laquelle le railway atteignit Kigoma, son point terminus. Jamais, depuis ce voyage, je n'ai rencontré autant de monde sur les chemins d'Afrique.

Pour nos campements nous avions bien soin d'éviter de planter nos tentes à l'endroit même où campaient tous ces nombreux voyageurs. Ces endroits étaient infects . . . et les seuls êtres vivants qui les nettoyaient un peu étaient ces nombreux scavangers que nous voyions perchés un peu partout sur les arbres des alentours. Il aurait fallu, près de chacun de ces campements, une rivière Alphée et un Hercule pour la détourner et pour en envoyer les eaux balayer tous ces immondices. Après trente ans j'ai encore, sinon dans le nez du moins dans le souvenir, cette abominable odeur qui flottait partout autour de ces nombreux campements disséminés le long de la route qui allait de Mwanza à Tabora. Pour nous, nous campions à l'écart, et de préférence dans les bois, ou encore mieux sur le bord des rivières lorque cela était possible.

A Tabora nous dûmes organiser une seconde caravane pour gagner Karema sur le Tanganyika. A Tabora il y avait bien une mission de Pères Blancs . . . mais comme il y avait aussi une succursale de l'indou Ali-Wisram, ce fut l'agent de cette succursale qui nous organisa notre caravane pour le Tanganyika . . . un trajet de vingt-et-un jours.

De Tabora je ne garde qu'un souvenir, mais qui n'est pas mince : je faillis, un soir, aller coucher en prison. Pour quel délit? J'avais, en plein township, tiré un coup de fusil sur un milan qui planait au dessus du jardin de la mission.

"Père," me dit immédiatement un missionnaire de Tabora, "vous venez de faire là un vilain coup que vous allez probablement payer assez cher. Préparez-vous . . . vous allez voir qu'avant une demi-heure un agent de la police sera ici pour enquêter sur ce coup de fusil . . . et vous serez conduit au tribunal."

Comme mon père—un vieux combattant de 1870—m'avait souvent parlé autrefois des tribunaux allemands, je n'étais qu'à moitié rassuré. Mais, en ma qualité d'ancien soldat du quatriéme Zouaves, je fis semblant de "crâner"

quelque peu . . . le prestige de l'armée l'éxigeait! En effet, un policier ne tarda pas à arriver à la mission, mais avec la concigne de faire seulement une enquête sur la provenance de ce fameux coup de fusil. Son enquête terminée il partit . . . et ne revint pas.

C'est tout joyeux que, vers le 20 Septembre, nous nous mîmes en route pour la dernière étape de notre long voyage, l'étape de Tabora-Karema, sur le Tanganyika. On nous força encore cette fois de prendre chacun une machilla avec six porteurs. J'avoue que, dans la suite, nous n'eûmes pas à le regrètter, car la fièvre ayant fini par faire son apparition chez quelques uns d'entre nous, ces véhicules, tant "blagués" au départ de Mwanza, nous rendirent de bons services, et c'est sans doute grâce à eux que nous arrivames tous, bien dispos et très en formes, le 15 Octobre, sur les bords du Tanganyika.

Trois ou quatre jours avant d'arriver à Karema nous traversâmes ce vrai paradis de chasse, la fameuse plaine de Katabi, aujourd'hui terrain de chasse réservé. J'ai vu, dans la suite, plus grande abondance de gibier, en particulier dans les plaines qui avoisinent le petit lac Rukwa, mais je n'ai jamais vu, réunies, autant de variétês de gibier que dans la plaine de Katabi. De tous mes compagnons j'étais le seul à avoir un fusil, et c'était un simple shot-gun! Je n'ai pas besoin de confesser que, avec un pareil weapon, je ne fis guère de vides dans la faune africaine, entre Mwanza et Karema. On nous avait dit à Marseille : pas n'est besoin d'acheter des fusils ici, vous en trouverez des quantités au Tanganyika—tous ceux qui ont été cédés par l'Association Internationale de Bruxelles—gardez donc vos quelques sous pour pouvoir, dans la suite, acheter ce que vous ne trouverez pas là-bas. J'ai souvent pensé depuis qu'il devrait exister des tribunaux pour juger et punir tous ces gens qui, gratuitement, donnent des conseils sans y être invités. Une de mes premières visites, en arrivant à Karema, fut d'aller voir ce fameux arsenal et cette non moins fameuse poudrière dont on nous avait parlé à Marseille. Je ne trouvai là que de vieux fusils et de tous modèles, et sans munitions, et tous ces engins dataient du second Empire et de la Monarchie de Juillet . . . voire même de la Restauration!

Trente ans ont passé sur ces vieux souvenirs . . . et pourtant ces souvenirs semblent d'hier, tant la vie passe vite, en Afrique peut-être plus que partout ailleurs.

Aujourd'hui on arrive de Marseille au Tanganyika en vingt-cinq jours . . . et demain, en aéroplane, on pourra y arriver en trois ou quatre jours . . . mais ce moderne moyen de voyage sera pour nos successeurs.

Some African Pastimes

By M. M. Hartnoll

MOST of the games played by Tanganyika Africans have been introduced at various times. There seem to be practically none of purely native origin, either for children or adults. While the *ngoma* cannot be classed as a game, it deserves a passing word, for on its social side the *ngoma* corresponds more nearly to the Middle Ages fair in England and it is interesting to speculate whether, in years to come, it will suffer the same fate and lose all its deeper significance to become solely an occasion for merry-making. It seems as though it might do so with the growth of the regular Saturday night *ngomas* in towns. Already in Dar es Salaam most *ngomas* are nothing but sideshows taking their place, on high-days and holidays, among the merry-go-rounds and shooting galleries provided by an enterprising foreigner. This kind of *ngoma*, and the "Europeani danci clubu" which exists in most towns, are the only dances which are purely pastimes, and have no tribal significance.

Association football has appealed to the native imagination and many small villages have their grounds and their teams. Some years ago in the Rufiji valley, village challenged village and the people themselves organized matches with no sort of European supervision or control. Cricket apparently makes no appeal and hockey is appreciated only to a very limited extent; even in places where the necessary equipment for these games is easily obtainable, little or no interest is shown. As with the wheel, the ball has been introduced into Tanganyika native life; the nearest approach to a purely native ball game that I have seen, was in the Central province where the young men used knobkerries to hit round stones along the road, but that was all there was to the game which appeared to have no rules or time limit.

The most common of sedentary games is *bau*. It is supposed to be of Persian origin and is a very excellent game. I have heard it described as "better than draughts but not so good as chess." There are several variants of the game which, like cards, is a game of skill with an element of chance. The rules are very definite and strict. As its name implies, *bau* is played on a piece of board having numerous hollows to take the playing counters; the board may be either *mvule* polished with use, or a light coloured wood ornamented with poker work. The smooth bluish-grey seeds of *mkomwe*, *Caesalpinia bonduc*, a thorny shrub growing in coastal areas, are the most usual counters.

Another game called *simbe* is a game of chance, played by two, three or more players, and is a kind of dice. Each player has two small cowrie shells

which he shakes in his hand and throws on the ground. The player whose shells fall nearest a mark is the winner. Each player has shells of different colours. Where cowries are not obtainable small pieces of wood are used; these may be plain, marked in poker work or of different colours. *Simbe* does not call for much skill and it does not compare with *bau* either as a game or in general popularity.

Card games played with ordinary English packs of cards are very general among the urban population. Though the cards are the same, their places and values are quite different. The ace, known as *rei*, is the highest and counts eleven; next to it comes the seven, called *bibi wa rei* or *seti* or *mganda saba* counting ten; thirdly the king, *mzungu wa nne* counting four; fourthly the knave, *mzungu wa tatu* counting three; and fifthly the queen, *mzungu wa pili* counting two. No other cards have any value, but six, five, four, three (*mganda sita, mganda tanu, mganda nne, mganda tatu*) have place, while ten, nine, eight, two (*mganda kumi, mganda tisa, mganda nani, mganda pili*) have no value and no place. The names of the suits are as follows: Spades, *Sparza;* Hearts, *Kapa;* Diamonds, *Ulu;* Clubs, *Pau*. In all native card games the four suits have equal rank.

The two card games generally played are known as *arabasetini* which is in two parts, the second being known as *mkato*, and *chanis*.

Arabasetini requires most skill and is worth a short description. It is played by six people in two teams. The players sit in a circle, alternately with their opponents. Eight red cards including a "nine" and a "ten" and eight black cards including a "nine" and a "ten" are first taken from the pack and placed aside. These are called the *garasa*, of which more later. The remaining cards are then dealt anti-clockwise, the deal passing after each round to the winner.

Three cards are dealt to each person in threes and the remainder of the pack placed in the pool with the top card faced. Each player turns up his top card in turn and the highest card of the same suit as that in the pool wins the round, its owner taking all the exposed cards. Should no card of the same suit be turned up the dealer takes all the exposed cards. The pack is then taken from the pool by the winner of the round who deals a new round similarly, but leaving the exposed card in the pool and the play is repeated until all the cards in the pack have been used, that is in three rounds. In the last round the exposed card in the pool is dealt to one of the players.

Each team then totals the values of its cards and the team having the highest score takes the red *garasa* and the losers taking the black. Should the losers score not amount to more than thirty they are given one card from the red garasa, should it not exceed twenty they are given three cards.

The cards are shuffled and dealt as before. After the first round the losers are given a "nine" from their opponent's *garasa* which the leader places in his hat and it is said of his team that *wamepandish bandera*, that means they have raised the flag. Should the same team lose again it is given the "ten"

from its opponents' *garasa* and the players go on to the second part of the game *mkato*. If, however, the first round winners lose, the opposing leader takes the "nine" from his cap and gives the "ten" from his own *garasa* to the new losing leader who places it in his hat. Unless one team loses twice in succession five rounds are played before *mkato* is begun.

Mkato.—The losers cut the pack and one of them deals six cards in threes to each of his team and hands the remaining cards to the winners, whose dealer does likewise and looking at his cards, places the highest in the pool when the other players each throw a card if possible higher than that on the table. The owner of the highest card takes them all and puts out a second, which is covered in the same way until the hands are finished. This is played five times and the cards of each team counted when the losers must make way for a new team.

If, however, one team has lost consistently they may be given a chance to recoup their losses by being asked by the winners "do you want the two of hearts?"; if they reply "yes, give it to us" the card is handed to them and they place it in a prominent place such as a tree or hut pole. They can then play one more round of *mkato*, which if they win makes them the winners of the whole game and their opponents must make way for a new team.

Chanis is very simple, has few rules and is mostly luck. It is rather like "Old Maid" and can be played by two, three, four or six people, each man playing for himself.

The three-card trick is well-known but, being illegal, it is only played on the sly. It is called *karata tatu*; "Spot the lady" is translated as *mzungu analala wapi?* The *mzungu* in question being *mzungu nne wa pau* or the king of clubs, which is thrown together with the queen of spades and two of hearts.

Story telling is always a favourite amusement. But the good story teller makes his tale so long, involved and full of repetition, that it is difficult for a European to follow the thread of it. Many tribes have a collection of stock fairy tales; those with a moral being most popular. In Rufiji folk-lore there is exactly the same tale as the three little pigs in which the part of the wolf is taken by a lion, and three brothers take that of the pigs. Many of the stories have as their moral man's ascendancy over the animal kingdom. Famous ancestors and their doings, mythical beasts, and supernatural occurrences all have their places in the tales told round a camp fire or in the huts at night.

Children have few round games and those they have are mostly introduced. In Morogoro they play a kind of hopscotch and boys at Mgeta in the Uluguru mountains play diabolo. Both of these games are obviously the result of mission or other European influence.

In several districts, I have seen sticks and stones laid out in patterns on the ground ornamented with leaves and flowers, and have sometimes been

asked for *bakhshishi* by the makers. The interest in this lies in the fact that it is exactly the same as the grotto-game once very popular in London streets but now rarely seen. It seems unlikely that the game was introduced into Tanganyika, for in all the places where I have seen it played by African children, the natives have come but little in contact with white people. The origin of the English form of the game is said to be a relic of pagan times.

The adult games of *bau* and *simbe* are played a good deal by children; the shape of the board being marked out in the sand and small stones are used instead of *mkomwe* seeds. *Ngomas* are also imitated being accompanied with home-made musical instruments with generally an old tin for a drum.

Children, especially boys, show great ingenuity at making toys for themselves; the are generally influenced by topical events in their choice.

On the coast, boys make toy outrigger canoes and sailing boats which they take great pains to make sea-worthy. Many are models, perfect in every detail, of the craft owned by their fathers. Some years ago, at Moa, north of Tanga, there was a fleet of model outrigger canoes to the number of about thirty; each one being made and owned by a small boy whose pride it was that its every detail was correct down to oars and punting poles. When the tide was on the ebb, the children went down to the shore to sail races in pools and slack water, when a pool would resemble the Round Pond in Kensington Gardens.

At Msasani, near Dar es Salaam, a child of about ten or twelve years old made himself a *mashua* (sailing boat), big enough for him to sail in. It was entirely his own work, made to scale and properly caulked. All the stays were made by himself of coconut rope and he had found a very small coconut shell to bale with; the tiny locker under the stern seat held a set of fishing tackle. The boat sailed perfectly, and the boy spent hours sailing and fishing in the harbour. He would have taken it out into the open sea but his father forbade this.

A favourite toy is a motor lorry. They can be seen in most villages through which motor traffic passes, and at Maneromango, in the Dar es Salaam District, the models are most clever replicas. They are made of sticks pinned together with sharply pointed wooden pegs. A well made model will have pieces of cloth tacked along the hood for side curtains, little bits of tin let into stick circles for head lamps, and a radiator made from the pith of a banana stem carefully extracted and let into a frame of sticks to represent honey-combing. An ambitious owner will occasionally whittle bits of wood into rough representations of a jack and set of tools. Tiny wood blocks and scraps of cloth, tied in bundles, represent the loads.

At Utete, within a week of the first aeroplane landing there, several toy aeroplanes were to be seen in the village. The numbers and lettering of the aeroplane were evidently a source of interest, for all the toy models were marked profusely. One proud owner had printed across the wings of his plane the words "Tanganyika and Kenya P.O. Utete."

Boys often become very proficient with catapults and bows and arrows; but apart from showing off their skill and amusing themselves, they use the weapons against the ravage of birds on the growing crops, it being the job of the women and children to guard the fields by day.

Rufiji children take long hollow stalks of the water-lily and placing one end in the water blow through the other to make bubbles; others make rifles out of the stalks of the pawpaw tree, using the pith of sugar cane for bullets. They also make a little hard round green fruit into a spinning top by putting a stick in one end and a sharp peg at the other.

Girls make dolls in some places; the Nguru children are particularly fond of dolls and occasionally mothers make them for the very small girls. But, generally speaking, girls have few toys, probably because from a very early age they start helping their mothers in their work and looking after the younger children; little four year-old girls are often seen accompanying their mothers on the journeys to draw water, carrying on their heads an old tin or a tiny clay pot. In Uluguru a favourite game with young girls is an *ngoma* portraying a woman's work from the time she gets up in the morning until she goes to bed at night—which shows the mentality of a native girl and her attitude to life.

There is, however, one round game for girls played among the Nguru which seems to have no foreign influence. It is called *Mwendo wa Mbarala*. A circle of girls slowly clapping their hands is formed round one of them who, as the clapping quickens, dances anti-clockwise round the circle with a shuffling Charleston-like step. When she begins her dance, one child in the circle sings a song with a chorus in which all join. When the song ends, the centre child stops immediately, the member of the circle who happens to be opposite takes her place, and they then begin all over again. The following are the words of the song.

Solo ... Ulele wa ulele
Chorus ... *Haya*
Shabani mtu mbaya
Haya
Kaja kunikaba shingo
Haya
Nalifanya kazi yangu
Haya
Ndani ya mzungu wangu
Haya
Kadanganya pesa zote
Haya
Anibakisia tandiko
Haya

Laughter is very near the surface of the Africans' make-up and, though often superficial, is always hearty. Play-time only occupies a relatively small

portion of their lives but during that time they play whole-heartedly without thought of yesterday or to-morrow. They would undoubedly fully approve of the following sentiments of Edna St Vincent Millay:

"I burn the candle at both ends
It will not last the night
But oh! my foes and ah! my friends
It gives a lovely light."

Notes on some Flowering and Ornamental Shrubs and Trees including Shade and Fruit trees, with special reference to those suitable to Tabora

By H. A. Lindeman

Foreword.

THESE notes are only intended to serve as hints to those garden lovers who are resident in parts of the Territory where the rainfall does not exceed about thirty-five inches, the dry season is generally long, sometimes six to seven months, and all the rain falls in a very short time, i.e. between December and April, thus making the conservation of soil moisture of paramount importance.

The short descriptive notes given under the main genera and species do not pretend to be strictly botanical but merely to serve as a guide to those amateur gardeners who are not familiar with the botanical names. To stricter botanists who require a scientific description, I would refer them to those two excellent books, "MacMillan's Tropical Gardening and Planting" and "A Manual of Cultivated Plants" by L. H. Bailey.

All the plants named have been grown by the author, unless otherwise stated.

Preparation and Cultivation of Soil.

The two essentials to be aimed at in dealing with the light sandy soils, such as those in and around Tabora are: (1) to give your shrubs and trees a good start before the dry season commences; and (2) to conserve soil water. Unless the enthusiatic gardener is prepared to spend the time, money and energy on completely trenching and manuring his garden the following procedure is suggested.

After having planned out the garden, having due regard to the height and size of the subjects chosen, and paying particular attention to the colour schemes of the flowering plants, the sites should be marked out with stakes. A circle about three or four feet in diameter should then be marked round the stake, and a pit about three or four feet deep should be dug out having a diameter as above. The bottom "spit" should be well broken up and loosened before proceeding. Well rotted farmyard manure, or any well rotted vegetable remains such as leaves, grass cuttings, hedge clippings or rotted fruit, from the compost pit should be put into the bottom of the pit, to a depth of at least eighteen inches. Here a word of warning: it is no use putting in only a small amount of manure. One *karai* full per pit is certainly not sufficient and is practically useless: if this scheme is to be followed the manure must not be stinted. More manure than suggested may be put in, but not less.

Having put the manure into the pit mix up with a little of the loose soil taken out and then fill in the pit, leaving a small hollow or basin in which the tree or shrub may be planted later. Any grass or weeds taken off the surface soil may be mixed up with the manure at the bottom of the pit, before the soil is placed on top. On no account, however, put in those species of grasses which have underground creeping stems, as there will only be trouble later. If the grasses are of the underground rhizome type, burn them, and add the ashes as a top dressing. If the more difficult and shy subjects are to be planted, it is better to "make up" the soil in the pit by either carting some good soil, or using the same soil and mixing it thoroughly with some well rotted dark coloured farmyard manure, which has been sieved through a piece of quarter- or half-inch wire netting, such as is used for poultry runs. This "compost" should be placed on top of the manure at the bottom of the pit, instead of ordinary soil.

It is always advisable to add a little lime-rubble if procurable, in order to counteract the acidity produced by the manure, and also because most soils in the localities mentioned tend to be naturally "sour."

The best time to carry out this operation is (1) either towards the end of the rains for next season's planting or (2) at the beginning of the rains for planting the same season. At these two periods the soil will be soft enough to work easily and also, which is of more importance, the value of the manure will not be lost owing to loss of ammonia and nitrogen due to the dryness and heat of the soil in the dry season.

Of the two times chosen, the period at the beginning of the rains, just before planting is the most preferable, as the manure will then be most effective.

This scheme will fulfil the two conditions mentioned above, that is (1) the manure will give the trees a good start before the end of the rains, giving them a fair chance of making good root growth and so surviving to the dry season, and (2) the manure helps to conserve moisture and hold it for some time and tends to act as a sponge, also at the place actually required, that is the roots.

NOTE.—On no account use fresh farmyard manure, as this will "burn" the roots, also while rotting is proceeding in the soil, there may be lack of nitrates and probably an excess of carbon dioxide in the soil air. Fresh manure will thus do more harm than good.

PLANTING.

The best time for planting is about a month after the beginning of the rains. In Tabora and similar districts this would be mid-December. By this time the soil will be fairly damp, and in a good condition for planting. The rains which follow will "water in" the plants and will help them to get over being transplanted, also encouraging root growth. Of course, planting should be done on a dull and rainy day if possible, unless the soil is very heavy and liable to cake. The pits having been prepared, a hole large enough

to give the roots plenty of room should be dug out. This will depend on the size and variety of shrub or tree.

Each plant should be carefully examined and all dead or damaged wood and roots should be cut out or shortened. Cuts made on the stems should be close to a node (that is a bud) and cuts at the roots should be downward cuts. The plants should be placed in the prepared holes and care taken that they are not planted too deep. They should be planted at about the same depth as they were in the nursery, which depth can be estimated by looking at the stem.

The roots should be spread out in all directions horizontally and not vertically; cover them with a little fine soil, and shake the tree well so that the soil works all round the roots, then tread down firmly; add a little more soil and tread down firmly again, and so on until the hole is filled up. The last two or three inches should be left loose and carefully raked over. A small basin about three feet in diameter should be left with raised edges, which will help to retain water during heavy rain and also facilitate watering with the can. Unless the soil is very wet the trees should be watered in with about a canful of water per plant, and a shade placed over the top, especially if there is a hot sun and drying wind.

These shades should be taken off as soon as the plants show signs of having become established. It is probably not necessary to add that care must be taken to see that the trees are perfectly upright when planting, and that it is sometimes advisable to stake the trees at the same time in order to prevent slanting growth and breakage of the stem.

After-Care and Cultivation.

The first point to remember with newly-planted trees is that they will require watering if there are any dry hot periods before they have become established. Secondly that the shades must be removed as soon as they have become established. Once the plants are growing well the following points must be observed: (1) Keep the surface soil to a depth of about two inches well stirred by raking round and do not allow a hard cake to form on the top. This assists conservation of moisture as it breaks up the capillary attraction and does not allow soil moisture to evaporate from the surface. (2) Keep a sharp look out for insect pests. The trees should be examined once a day and any larvae or beetles picked off and placed in a tin containing paraffin and water.

Watering and Liquid Manure.

Watering should be done in the early morning or evening and not when the sun is very hot. It is well worth while remembering that a plant requires water at the roots and not the leaves. If the leaves are watered this is only assisting dust to stick on the foliage and so block up the stomata or breathing pores; also if drops of water stick to the leaves during the heat of the day

they act as little lenses concentrating the rays, thus causing scorching of the foliage.

Small quantities of water should not be given as this only encourages surface roots, which are liable to become killed during the dry season. It is far better to give a thorough soaking, of at least a canful per plant, say twice a week, than a small dribble every day, which is worse than useless. When the plants are growing well, in order to encourage good root growth a little liquid manure should be added to the watering can.

This liquid manure may easily be made by putting some farmyard manure or sheep manure into a small sack or petrol tin through which a number of holes have been punched, and hanging it in a barrel or *pipa* filled with water. Not more than about two cigarette tins of the liquid so obtained should be put into each watering can. Do not on any account use this liquid too strong, or the plants will be scorched; if used regularly and judiciously it is amazing how the plants respond and it is very well worth the little extra trouble.

Mulching and Top Dressing.

As mentioned above, one type of top dressing simply consists of keeping the surface soil well stirred; and this is probably the safest method especially where termites are numerous. Mulches may also be made by using well-rotted long strawed manure or grass cuttings, which are placed all round the trees and so conserve water. If this is done, however, care must be taken that white ants are not attracted to the stems by the moisture and potential food in the straw or grass. A small space left round the actual stem and a top dressing of lime helps to keep away this pest.

The author has found, however, that the long mulches generally do more harm than good because they attract white ants and other insects especially to such shrubs as roses. In order to overcome this difficulty it is advisable to use fairly short well-rotted manure which has passed through a sieve of about a quarter-inch mesh.

This is valuable not only as a mulch but also as a top dressing, especially if applied just before the rains. Lime or chalk may also be used as a top dressing in order to keep the soil sweet, and various artificial manures may be used, but are generally very expensive and require to be applied with great caution, otherwise scorching will result.

Staking.

Young trees should be securely staked before the winds of the dry season, especially such subjects as Jacaranda. Where there is a very definite prevailing wind young trees soon bend over and grow in an unsightly slanting position unless staked. In order to avoid disturbing the root system the stake should be driven in obliquely about two feet from the base of the tree in such a way that the top of the stake just reaches the main stem underneath the head of the tree. The head of the stake should face the direction of the prevailing

winds in order to give the tree as much support as possible. A piece of cloth or sacking three to four inches wide and about one foot long should then be wound round the tree to prevent the stake damaging it and to enable the stake and tree to be tied firmly together with string or tarred twine.

Another method is to drive two stakes in on either side of the tree at a distance of about a foot from the base. A cross-piece is then nailed to them just below the head of the tree so that it does not rub the lower branches. Finally a piece of sacking should be bound round the tree and tied to the cross-stake by means of string.

For shrubs with a decumbent or climbing habit, such as Allamanda and Ipomea a circle of short stakes may be driven in round the bush, and some long whippy laths tied to all the stakes thus forming a complete circle. The spreading twigs may then be lightly tied to this cross-piece in any position required. Further circles may be added as the shrub grows, so that finally there will be several circles in ascending order.

Care should be taken when tying not to strangle the stem by tying too tightly. A loop should always be left between the support and the stem in order to allow for growth.

Climbing shrubs such as Bougainvillea and Quisqualis may be trained against walls, archways, or up pillars, like rambler roses. When training up the sides of walls it is advisable to train in a fan, tying the shoots to suitable wire or wooden structures rather than attempting to train horizontally.

Manures and Manuring.

The best manure for all practical purposes is undoubtedly good farmyard manure. This is generally cheap and easily procurable, and if it has been properly made and stored cannot be beaten.

On light sandy soils manure which has been mixed with long grass or straw is the best. This type of manure helps to retain water, improves the texture of the soil and helps to check soil erosion. "Short" farmyard manure is of very little value on sandy soils, as it soon washes out in wet weather, and becomes dry and dust-like in hot weather, quickly losing its valuable plant foods, due to loss of ammonia and nitrogen.

All manure used in the garden should, however, be well rotted and matured, and all fresh manure be considered dangerous. For this purpose it is advisable to make a compost pit in some odd corner of the garden, where manure and any organic rubbish may rot. This simply consists of a fairly large pit three or four feet deep, into which farmyard manure, leaves, grass cuttings, weeds and any vegetable remains may be thrown. A little good soil and lime may be mixed with this organic material, and the top covered with a layer of about two inches of soil.

After two or three months a very good compost will result, which, if when ready will be a dark brown or black colour, and will be invaluable for top dressing and general manurial purposes.

This pit is also a convenient method of getting rid of garden rubbish and converting it into a valuable plant food, but care should be taken not to include grass and weed seeds, or creeping underground shoots of grasses in this compost, otherwise these undesirables will grow when the manure is put on the land.

Propagation of Plants.

The chief methods of propagation are (1) seeds and (2) vegetative, that is cuttings, layering, suckers, etc.

(1) Seeds : *Direct.*—Many tree seeds may be sown directly into the prepared site where they are required to grow. Such trees as Cassia, Siamea and Poinciana regia (Flamboyant) may be propagated in this way. Four or five seeds should be sown in each place, at the beginning of the rains, and if germination is good these may be thinned to leave one or two seedlings. The extra seedlings may be used to fill up any spaces where germination failed.

Nursery beds.—Certain trees and shrubs are better sown in prepared and well manured beds. These may later be transplanted direct into the required sites or, better still, may be pricked out into small pots made of banana or palm leaves.

The seedlings should be quite small when transplanted into the pots, only having one or two leaves other than *seed* leaves. The pots should be raised from the ground by placing them in a roughly constructed stand, otherwise white ants will attack and destroy the pots and eventually the trees. The seedlings should be shaded by means of grass *bandas* or matting, and when well established they may be planted out together with the pot, the rim of which should just be level with the surface soil. The pots will rot, and rooting will take place quickly and efficiently. Young trees should generally be watered and shaded after planting out.

Seed boxes or pots.—Certain rarer or more difficult subjects will require sowing in seed boxes or pots, and should be brought on in the shade house (which see below). They will need careful watering and weeding, and a sharp look-out should be kept for insect pests, which would otherwise probably destroy them when in the young state. When they are large enough they may be planted out into banana pots, or the boxes taken out to the actual site and the seedlings transplanted from the boxes.

When transplanting take as big a "ball" of soil as possible with the roots of the seedling. If the soil is allowed to fall or break away from the fine rootlets, the most important part of the root will be destroyed, that is the root hairs which lie just behind the tips of the fine roots. If this occurs the plant takes a long time to recover from the shock of transplanting and has to make new root hairs before it can commence growth.

Firm the seedling all round, but not too heavily or the roots will be broken. Water the plant in, and on no account leave the roots of seedlings exposed to air or sunlight, otherwise the percentage of failures will be very large.

Vegetative Propagation : *The shade house.*—In order to obtain the best results, when propagating shrubs by means of cuttings, it is advisable to erect a small shade house. This simply consists of about four wattle poles stuck in the ground so as to form a rectangle, with a ridge and rafters constructed of light poles and *fito*. The roof may be lightly thatched with ordinary long grass, but care should be taken not to make the shade too heavy. A suitable size for the average garden would be about fifteen feet by ten feet, and not less than about five feet high to the eaves. A rough staging, constructed of stakes stuck in the ground, with a top made of long longitudinal timbers resting on the uprights, and small pieces fixed across, will be required. The staging should be erected on each side of the house with a passage down the middle.

A very good stage may be made by obtaining some old iron bed frames, to the top of which cross pieces may be fixed : this also has the advantage of being white ant proof.

The sides of the house may be enclosed with the wire netting as a protection from birds and other destructive animals, if this is necessary, and a small door added at one end.

Cuttings.—Cuttings may be struck in beds, boxes, water or a rough propagating frame. The cuttings of most garden shrubs should be made from well matured strong woody shoots of the previous season's growth, and should be about nine to twelve inches in length. They generally give best results when cut through just below a node at the lower end, and just above a node at the upper end. This stops rotting of the internode, as it is only at the nodes that adventitious roots or leaves are formed.

All the leaves should be taken off, except two or three at the top of the cutting, in order to prevent loss of water due to transpiration from the leaves. Care must be taken not to pull out the buds in the axils of the leaves.

In some cases, roots form more readily when the cuttings include a "heel" or small basal pieces of wood from the older branch on which the cutting grew. Cuttings should always be made with a sharp knife, not secateurs, and a clean slightly slanting cut must be made.

The beds or boxes in which cuttings are to be struck should be made up with a fairly sandy compost, in order to keep the soil as open and as well aerated as possible.

A suitable compost for most hard wood cuttings would be five parts good soil, three parts sand, and two parts manure and lime.

If cuttings are to be inserted in boxes or pots see that good drainage is provided by drilling holes about half an inch in diameter in the bottom of the boxes and putting small flat stones or pieces of broken pots over these. A layer of well rotted manure should be put over the stones and then the fine compost added. Finally, a layer of white sand or grit should be placed on the surface.

With a wooden dibbler a hole is made sufficiently large to allow the cutting to enter easily, and care must be taken that the base of the cutting roots is on

a firm bottom. It is a very good plan to drop a little sand into the hole before inserting the cutting as this will prevent rotting and encourage the quick formation of roots.

Cuttings must always be well firmed whether planted in beds or boxes or pots. If cuttings are placed so loosely in the soil that they can easily be pulled out, the chances are a hundred to one that they will fail. In practice it is found that cuttings root much more freely when in contact with the sides of the pots, especially such subjects as roses.

The cuttings should be shaded either by erecting shades over the beds, or placing the pots or boxes in the shade house. They must be carefully watered regularly and not allowed to get too wet or too dry. The surface soil should be kept well stirred and free from weeds.

The striking frame.—A rough but quite efficient propagating frame may be made by digging out a small rectangular pit about one foot to eighteen inches deep and lining the sides with pieces of corrugated iron or wood so that the edges project about six inches above the surrounding soil. The space thus made is now filled in with a suitable sandy compost, with a layer of well rotted manure at the bottom and a few small stones or "crocs" to assist drainage underneath the manure. The top may be covered with grass or bamboo mats, which will give a good shade, and also keep the atmosphere inside fairly close and moist; this will induce rooting and prevent wilting.

The advantage of using corrugated iron or tin sheets at the sides is that termites and other insects will be kept away. This type of frame although very rough will be found particularly useful for such cuttings as roses. Cuttings may also be planted in pots, and the pots "plunged" into the compost contained in the frame; this method is generally very efficient but fewer plants can be struck.

Layers.—The process of layering simply consists in bending and pegging down a stem of a plant so that the middle of the curve is covered with soil. This is a particularly useful method of propagating such shrubs as the double white Oleander. Adventitious roots soon arise from the bent portion of the stem in the soil, after which the "layers" may be cut completely away from the parent plant.

In order to assist in the formation of roots an oblique slit is sometimes cut upwards almost through the stem at a node. This is termed "Tongueing." "Ringing" is sometimes adopted, and consists in removing a complete half- or quarter-inch wide ring of bark. These devices and others retard the flow of sap backward from the free portion of the shoot above ground and tend to induce the formation of adventitious roots.

Suckers.—These are shoots which come from below ground on the stems or roots of shrubs and trees. Examples may be seen in bananas and date palms. The suckers generally bear roots and when separated from the parent may become a new plant.

Preliminary List of Ornamental and Flowering Shrubs.

Acalypha macrophylla (H.B.K.), "Jacob's Coat," nat. ord. Euphorbiaceae (Spurge Family).

An ornamental shrub up to fifteen feet in height. Leaves heart-shaped (cordate) with dentate margins. Variously mottled with shades of red purple and dark brown. Flowers in inconspicuous reddish spikes.

Propagation. Easily grown from cuttings.

Pruning. The main branches should be shortened back before they get too straggly. Old wood should be cut out periodically in order to encourage new shoots bearing fresh foliage.

Acalypha hispida (Burm) (syn. *A. sanderiana* N.E. Br), "Redhot-Cattail."

Leaves green and broad ovate pointed. Margin dentate. Flowers long drooping spikes—bright red in colour.

Propagation and pruning as above.

A. marginata (W. Miller).

Leaves ovate, green with red veins and the toothed margins are picked out in pink or crimson.

Propagation and pruning as above.

Adenium coetaneum, nat. ord. Apocynaceae.

A small succulent shrub with swollen green stems. Leaves obovate, shiny green above with whitish veins. Grey-green below and venation not visible. About 2 to 3 inches by $\frac{3}{4}$ to 1 inch wide. Spiral arrangement. Flowers pink, campanulate-funnel form like a small Allamanda.

Agave rigida var. *sisalana*, nat, ord. Amaryllidaceae (Amaryllis Family).

Known as "sisal" sometimes useful as hedges to prevent cattle straying in.

Agave americana (L) var. *variegata*.

Like sisal but has striped green and yellow leaves and is sometimes ornamental.

Propagation. Bulbils or suckers.

Allamanda grandiflora (Hook), nat. ord. Apocynaceae (Dogbane family).

Climbing shrub. Leaves obovate tapering at both ends. Arranged in whorls. Very shiny light green above, light green not shiny beneath. Mid-rib slightly pubescent on under surface. Flower large golden to primrose-yellow 4 to $4\frac{1}{2}$ inches across. Campanulate-funnel form in shape. Disc five lobed. Throat marked with reddish-brown stripes. Buds bronze.

Propagation. By cuttings or layers.

Pruning. These shrubs may be grown supported by a circle of stakes. The leaders should then be shortened back before they get too long and untidy, and also to encourage new growth in the middle. Old wood must be cut out. If grown as a climber the leaders need not be shortened, but tied to supports.

Cryptostegia grandiflora.

Climbing or scandent shrub. Pointed elliptical leaves, dark green above with a prominent whitish mid-rib, smooth, opposite arrangement. Flowers similar to *Allamanda grandiflora* but smaller and violet coloured.

Propagation. Fairly easily by seeds. Cuttings more difficult.

Pruning. A very straggling bush, but if long shoots are cut hard back may be kept in a good shape. Can also be trained as a climber. Requires feeding in the form of fairly frequent top dressings.

Angelonia salicariafolia, nat. ord. Scrophulariaceae (Figwort family).

A small low growing shrub about two to three feet in height. Leaves small lanceolate. Opposite, surface hairy—hairs producing a sticky exudation which smells rather of figs. Upper half of leaf serrate. Flowers erect spikes of violet coloured flowers which remind one of a small foxglove.

Propagation. Easily raised from cuttings; also seeds.

Pruning. As soon as the flowering spikes have finished blooming they must be cut hard back otherwise the leaves will start to turn yellow and the shrub looks untidy. Flowers will continue throughout the whole year if this is done. A certain amount of water should be given during the dry months. Once a year, that is just before the rains, the old wood should be cut back when new shoots will quickly appear from the base, and a mass of flowers will result.

Bignonia venusta (Ker), "Golden Shower," nat. ord. Bignoniaceae (Bignonia family).

Climbing shrub. Leaves trifoliate except upper leaves which have the middle leaflet reduced to a tendril. Leaflets ovate to cordate pointed. Entire, glabrous. darkish green. Flowers in many cymes of brilliant orange waxy trumpets.

Propagation. Layers or cuttings.

Pruning. Not enough experience of large specimens to be able to state.

Bougainvillea glabra (Choisy), nat. ord. Nyctaginaceae.

The common purple species which is seen so often that it has become almost a weed among shrubs. The flowers are small and white, and it is the *bracts* which are coloured purple.

B. spectablis (Willd), var. *laterita* (Lem).

Brick red *bracts*. A very slow grower.

B. brasiliensis.

Rosy red species. There is also a pink variety of this.

B. splendens.

Magenta coloured *bracts*. Not so strong growing as glabra but infinitely a better colour. The variety Mrs Butt has beautiful purple crimson *bracts*, but has not been tried by the writer yet.

Propagation. All propagated by cuttings, preferably of well matured previous year's wood and thick stems.

Pruning. This shrub may be trained up walls along fences, or kept trimmed as a bush or pillar. If training on walls or fences the leaders should be tied in, and all laterals spurred back to about two buds. By continuous trimming it can be made to form a thick impenetrable hedge, or very showy bushes of various shapes.

Buddleia variablis (Hemsl), nat. ord. Loganiaceae.

Shrub up to six feet or so. Leaves ovate to lanceolate, dark green above, very hairy and greyish beneath, margin serrate. Flowers in cylindrical panicles of purple or lilac colour.

Propagation. Cuttings or layers.

Pruning. Unless the shrubs are hard pruned they will get bare in the centre. The shoots should be cut back before the rains and this will encourage fine flower spikes.

Callistemon lanceolatus (DC), "Bottle Brush," nat. ord. Myrtaceae.

Shrubs up to twelve feet. Leaves simple lanceolate with small sharp point. Small 2 by $\frac{1}{4}$ inches. Surface hard and glabrous, margin slightly ciliate, young leaves pubescent. Flowers in terminal spikes consisting almost entirely of numerous long bright red stamens with very small yellow anthers. Petals reduced to five small greenish leaves. Pistil long and red.

Propagation. Generally seed, but cuttings of young shoots should be tried. (The writer has not tried cuttings up to the present.)

Pruning. Not enough experience of large specimens to state.

Cassia alata, nat. ord. Leguminosae.

A large shrub. Leaves large pinnate with about nine to ten pairs of opposite leaflets. Shape oblong and obtuse. Top pair about $7\frac{1}{2}$ by $4\frac{1}{4}$ inches gradually becoming smaller until bottom pair are only 3 by 2 inches. Rachis flatly grooved on upper surface and yellowish in colour. Flowers orange-yellow erect

spikes. Pods brownish-black with four wings containing numerous flat black seeds.

Propagation. Easily grown from seeds.

Pruning. The flower spikes should be cut back after flowering unless the seeds are required. If the numerous seed pods are left on they weaken the plant. This bush is susceptible to attack by white ants, when in the young state.

Codiaeum spp., "Crotons," nat. ord. Euphorbiaceae.

About fourteen varieties of *C. variegatum* (Blume) have been grown in Tabora. Shrubs with variegated and brightly coloured leaves. Leaves vary in shape from ovate, lanceolate, to linear.

Propagation. Easily by cuttings if kept moist enough.

Pruning. Very little except trimming to keep in shape. These shrubs require watering, and mulching in the dry season, otherwise they make little headway and may be very slow growing.

Caesalpinia pulcherrima (Sw), syn. *Poinciana pulcherrima* (L), "Barbados Pride," nat. ord. Leguminosae.

A shrub ten feet high. Leaves bipinnate, mimosa-like with twelve to sixteen leaflets and twenty or so one-sided oblong pinnules. Stems and branches with prickles. Flowers orange to red. There is also a yellow-flowered variety.

Propagation. By seed.

Pruning. Flowering stalks should be cut away when flowering is over unless seeds are required. The main leaders may be shortened back before the rains in order to preserve shape and encourage foliage and flowers.

C. gilliesii (Wall), syn. *Poinciana gilliesii* (Hook).

Straggling shrub. Flowers in terminal racemes large light yellow with bright red stamens protruding three to four inches.

Pruning and propagation. As above.

Datura arborea (L), nat. ord. Solanaceae.

Large shrub to small tree. Leaves long ovate very hairy, in pairs or nearly so, one leaf being shorter than the other. Flowers hanging large trumpet-shaped. The corolla is white with greenish veins.

Propagation. Fairly easily by cuttings; also seed.

Pruning. Straggling branches should be shortened back, and very old wood cut out periodically.

D. suaveolens (Humb), usually cultivated as *D. arborea* (Hort).

Tree like shrub. Leaves ovate, but glabrous and not hairy as above. Flowers large hanging white trumpet-shaped.

Pruning and propagation. As above.

Duranta repens (L), syn. *D. plumieri* (Jacq), Pigeon-berry, nat. ord. Verbenaceae.

Spreading shrub or small tree. The branches may be spiny or unarmed, often drooping. Leaves pointed, elliptic-opposite, light green in colour. Flowers loose racemes, lilac to blue in colour. Fruit small orange berries. The shrub is evergreen but tends to droop and go yellow in the dry season unless watered.

Pruning. Requires hard cutting back in order to keep in shape. It can also be used as a clipped hedge.

Propagation. Cuttings, but also grows quickly from seed.

Eranthemum nervosum (R.Br), syn. *E. pulchellum* (Hort), nat. ord. Acanthaceae.

A small shrub two to four feet high. Leaves ovate, thick, prominently veined, the veins being yellowish in colour. Flowers side and terminal spikes of blue flowers.

Propagation. Easily from cuttings.

Pruning. A little shortening of leaders.

E. atropurpureum (Bull).

Leaves long ovate 6 by 3 inches generally coloured wine-purple or darker purple and blotched. Flowers on axillary or terminal spikes, white with a purple centre and spots.

Propagation and pruning. As above. These shrubs are generally shy and slow growing subjects in hot districts, and liable to attack by white ants. They require water and mulching.

E. eldorado. A form of the above has very pale green leaves blotched with yellow.

Euphorbia pulcherrima (Willd), syn. *Poinsettia pulcherrima* (Graham), nat. ord. Euphorbiaceae.

The common name is Poinsettia. Leaves long ovate to lanceolate and often lobed. The bracts are variously coloured, but the red and yellow varieties grow very well. There are also cream, pink, and striped varieties, but have not yet been tried.

Propagation. Generally by cuttings, but seed may be worth trying in order to obtain new colours.

Pruning. The long branches may be cut back after flowering in order to keep the bush in shape. They flower during the dry season and so are particularly useful when colour is required.

E. cuneata.

Also grows wild. A shrub which makes a fine thick hedge if kept trimmed. It appears to be nearly evergreen, and when in full leaf looks something like a box hedge. Leaves simple—spatulate in shape small 2½cm. by 1cm.—dark green in colour with light coloured veins above. Light green below with no veins visible. Spiral arrangement on spines, also arranged in whorls having appearance of small rosettes. Thorns holding leaves up to five inches or more in length. White latex. Flowers small inconspicuous green with white stamens.

Propagation. By cuttings.

Pruning. This shrub will get very straggly unless kept carefully trimmed (*see* notes on Hedges).

E. tirucalli, Manyara.

Too common and well known to require description. Useful as a hedge if nothing else can be procured but is rather a weed and not exactly beautiful. It should not be trimmed too hard, otherwise it becomes very woody and brown-looking.

Hibiscus rosa-sinensis (L), "Rose-of-China," nat. ord. Malvaceae.

Medium to large shrub. Leaves pointed ovate. Upper half of margin dentate. Surface smooth. Lighter green below than above. Arrangement alternate or spiral. Twigs green in colour. Flowers generally double, rose-red in colour.

Propagation. Cuttings strike easily.

Pruning. Long shoots should be cut back to encourage thick growth and flowers.

H. schizopetalus (Hook), "Coral hibiscus."

Large shrub with long drooping branches, bearing coral or red coloured flowers, general terminally. Petals much divided. Leaves long pointed-elliptic. Upper half margin dentate. Lighter green below. Surface smooth.

Propagation and pruning. As above.

? *H. mutablis* (L).

Large upright shrub. Leaves broad pointed ovate. Surface slightly hairy and colour much darker green than above species. Arrangement definitely alternate. Young twigs reddish-brown in colour and not green as in *H. rosa-sinensis.* Flowers large single pink similar to a holly-hock, with a long projecting pistil. The flowers generally open pink but gradually get darker.

Pruning and propagation. As above.

NOTE.—This may only be a hybrid variety from *H. rosa-sinensis* but the points of differences noted above lead the writer to believe that it is a distinct species. There are also white and coral pink flowered varieties of hibiscus, some of which are now being tried.

Ipomoea shupangensis, nat. ord. Convolulaceae.

A fairly large straggling bush. Not a climber. Leaves heart-shaped, that is cordate. Dark green above. Lighter green below with prominent whitish veins. White latex. Flowers trumpet-shaped like "Morning glory" but pale mauve in colour. The masses of flowers are particularly lovely in the mornings, and this shrub is well worth growing especially as it flowers the whole year round, and also in the dry season.

Propagation. Very easily indeed from cuttings.

Pruning. Unless the long straggling branches are cut hard back after flowering this shrub may become completely out of hand and present a very untidy appearance. It can be cut several times a year, and this will encourage fresh growth and more flowers. It should be tied to a ring of stakes in order to keep it off the ground. It is also supposed to make a hedge if carefully kept in check.

Ixora radiata, nat. ord. Rubiaceae.

A fairly low growing evergreen shrub with pretty umbelliferous-looking white or yellow flowers.

Propagation. By cuttings.

Pruning. The writer has not grown this shrub so cannot state.

I. coccinea (Hort).

An evergreen shrub growing no larger than five feet. Leaves sessile, pointed-ovate, opposite. Dark shiny green above. Flowers in terminal heads, scarlet in colour. Each flower four petals in the form of a star.

Propagation. By cuttings.

Pruning. Very little required. This has shown itself to be a very shy subject in Tabora, and requires regular watering and manuring, but is well worth growing.

Jatropha multifida, nat. ord. Euphorbiaceae.

A large shrub to small tree. Leaves large with generally eleven main veins, the blade dividing into eleven lanceolate lobes. The lobes often divided again into three or four lobes near the apex. Flowers in heads of brilliant red small flowers which look like pieces of branching coral. Ovary green, two-celled with one ovule in each cell.

Propagation. By seeds.

Pruning. Old branches should be cut back before they become too long and bare.

Jasminum spp., nat. ord. Oleaceae.

Many species are worth growing, and probably *J. mauritianum* would grow best in dry districts, but the writer has not tried this shrub.

Propagation. Generally cuttings.

Lagerstroemia indica (L), "Crepe flower" or "Pride of India," nat. ord. Lythraceae.

Shrubs up to ten feet or so. Leaves pointed oval. Alternate, turning red before falling. Venation more prominent below. Flowers generally pink, but may be white or purple. Petals six and fringed looking like pieces of crepe.

Propagation. Cuttings.

Pruning. The branches should be cut back after flowering and before rains in order to encourage fresh growth. These shrubs appear to be very susceptible to attack by white ant, especially when freshly planted. They may require watering in the dry season.

L. reginae (Roxb).

Larger leaves and flowers than *L. indica*. Flowers generally mauve or purple in colour. This does not seem to have been tried in Tanganyika, but it should do well.

Lantana camara (L), nat. ord. Verbenaceae.

Shrubs half-climbing. Leaves long ovate tapering at both ends. Very hard hairs in both surfaces. Margin serrate. Opposite arrangement. Flowers in spherical heads. Opening white with an orange centre, turning pink. General impression is pink. There is another variety probably of the same specus with leaves broader, ovate or cordate. Flowers as above but opens yellow turning orange and finally scarlet. General impression orange.

Propagation. These shrubs can be trained to climb up pillars, etc., and require little pruning except shortening of leaders.

Nerium oleander (L), "Oleander," nat. ord. Apocynaceae.

Evergreen shrubs with dark green lanceolate leaves arranged in whorls of three. Too well known to require description. There are four main varieties. Double pink, double white, single pink, single white, all beautiful.

Propagation. Cuttings are best struck in pure sand. The double white is sometimes difficult and old wood should be rooted in water before transferring to sandy compost.

Pruning. Flowers shoots should be cut back, and old wood periodically cut out.

Panax dissectum (Hort), nat. ord. Araliaceae.

Is the small much divided leaf shrub generally grown in pots. The large shrub is actually *Polyscias quilfoylei*, var. *lacinata* (Bailey). An upright shrub up to twenty feet in height or more. Leaves pinnate with two to three pairs leaflets and a terminal leaflet. Shape of leaves vary from pointed ovate to obovate. Margin sharp equal teeth. Surface glabrous, dark, shiny green, edged and blotched with pale yellow.

Propagation. By cuttings.

Pruning. Sometimes used as hedges in which case the upright branches need shortening back before they grow too long and thin.

Plumbago capensis (Thunb), nat. ord. Plumbaginaceae.

A smallish shrub. Leaves oblong or spatulate about one and a half inch long. Flowers in short spikes, sky-blue in colour.

Propagation. By division of the root stock or possibly cuttings.

Pruning. It must be kept closely trimmed and all old shoots should be periodically cut out close to the ground. It will require water and mulching in the dry season.

Plumieria acutifolia (Poir), nat. ord. Apocynaceae.

White flowered *Frangipani*. Too well known to require description.

P. rubra (L).

Red flowers and very attractive.

Propagation. Very easy by cuttings.

Pruning. Very little except to keep shrub in shape. Both species very easily grown and make a good show especially in the dry season.

Quisqualis indica (L), "Rangoon-Creeper," nat. ord. Combretaceae.

A fairly rapid-growing climbing or scandent shrub. Leaves long pointed cordate-lanceolate. Light green in colour. Young leaves bronze coloured, and pubescent. Old leaves glabrous on upper surface and slightly pubescent below. Venation prominent on lower surface. When leaves fall the petiole becomes a short thorn especially in long climbing shoots. Arrangement of leaves opposite. Flowers in terminal hanging spikes. Green calyx-tube; five petals, opening

white, turning pink and finally wine-red. Sweetly scented especially at night.

Propagation. Cuttings or suckers.

Pruning. This shrub is not generally a rampant grower in dry districts. It may be trained to cover arches, or climb up pillars, or be trained over wire. The long shoots must be carefully tied up in the directions required. All flower stalks should be spurred back after flowering and weak twigs cut hard back. It generally requires heavy mulching and is a "hungry" shrub. It is better to keep it watered in the dry season until well established.

Rosa spp., Roses.

The growing of roses is a specialist's job and there are many good books on the subject to which the reader is referred. Generally speaking roses may be grown in the open very successfully, provided the soil is deeply dug and well manured before planting. (*See* notes on Preparation of the Soil and Planting.) Another point to remember is that the old-fashioned sorts grown from strong cuttings are generally best. They will usually require plenty of feeding in the form of liquid manure and dung-mulches, but great care must be taken that the roots are not attacked by white ants. (In this connection *see* notes on Control of White Ants.)

Pruning. No simple rules may be laid down and the reader is referred to any good book on rose-growing. A few points to remember are: (a) Remove all weak growths and dead twigs, diseased or damaged shoots; (b) Keep the bush open in the centre; (c) Cut back all flowering shoots as soon as the blooms begin to drop. The more this is done the more blooms are obtained and the longer the flowering period; (d) The stronger the growth the less it should be cut, the weaker the growth the harder it should be pruned. (e) The correct time for pruning is just before the rains.

Russelia juncea (Zucc), syn. *R. equisetiformis* (Schlecht), "Antigua Heath," nat. ord. Scrophulariaceae.

Small branches shrub one to three feet. Leaves very small in whorls with whorled lateral stems. Main stems long, olive green, round or slightly angled. Lateral stems four-angled. The whole appearance heath-like. Flowers in drooping cymes, tubulor, bright coral red in colour.

Propagation. Cuttings or suckers.

Pruning. Weak growths should be cut back and flowering stems shortened after flowering. These shrubs should be staked, unless grown on a rockery where they do very well providing a good pocket of soil and manure is prepared. Liable to attack by white ants especially when newly planted.

Sesbania ? aegyptiaca, nat. ord. Leguminosae.

This is the indigenous species but seems to be slightly different from the garden specus, which is probably a variety of it. Small soft-wooded tree up to twenty feet or more. Leaves pinnate up to eighteen inches long. Leaflets oblong, pale green, opposite, about half an inch long. Branches with small red prickles. Flowers laburnam-like, in terminal spikes. Papilionaceous, yellow spotted with dark purple or brown. Pod cylindrical about one foot long, hanging, brown when ripe.

Propagation. Seeds.

Solanum seaforthianum (Andr), nat. ord. Solanceae.

Slender climbing spineless shrub up to ten feet. Leaves. Flowers in small cymes, deep violet or purple in colour, producing red berries in bunches.

Propagation. Seed.

Solanum macranthum a beautiful spreading tree with large leaves and covered with violet flowers has not yet been tried, but is a beautiful sight in Uganda.

Tecoma stans (Juss), "Yellow-elder," nat. ord. Bignoniaceae.

Erect shrubs up to five feet with deciduous foliage. Leaves pinnate with three to four pairs of leaflets and a terminal leaflet. Leaflets coarsely serrate. Long ovate in shape. Flowers in terminal racemes—yellow, funnelform, with red stripes inside the corolla tube. Fruits brownish capsules about six to seven inches long which look very like untidy after-flowering.

Propagation. Easily grown from seeds.

Pruning. The flower stems should be cut back before the fruit make the bush look untidy. Staggling branches should be shortened in order to preserve shape. It is sometimes grown as a hedge but is useless in dry districts such as Tabora as all the leaves drop in the dry season, unless kept constantly watered.

Thevetia neriifolia (Juss), nat. ord. Apocynaceae.

Leafy evergreen shrub or even small tree. Leaves linear up to six inches long by one-quarter inch wide, spirally arranged. Dark green above and light green below. Flowers yellow trumpets two to three inches long. Fruit black compressed triangular drupe.

Propagation. Generally seed.

Yucca aloifolia (L), "Spanish bayonet," nat. ord. Lilaceae.

Leaves wide stiff and bayonet-like with a sharp point. Flowers white and hanging.

Propagation. Suckers.

The writer realizes that there are many other shrubs which would probably grow, and do grow, in dry districts, for example Lonicera spp. "Honeysuckle," has been seen growing in Tabora. He has only attempted those shrubs which are known to grow easily and with which he has had experience. It is realized that the list is very incomplete, and any additions and suggestions would be welcomed.

Pruning.

Objects of pruning.

1. To make a good tree with a good shape.

2. To leave sufficient space so that air and light may reach all parts of the tree, branches, shoots, leaves, buds and flowers, in order that they may do their work perfectly, and so make a healthy tree or bush.

3. To make the tree bear more and better fruit, and encourage good foliage.

4. To remove dead, damaged or diseased parts.

Pruning implements.—Pruning should always be done with a *sharp* knife, secateurs or saw. A good clean cut must be made and the branches and bark should not be broken, otherwise insect and fungoid pests are likely to enter and kill the branch or even the whole tree.

When cutting a large branch a sharp pruning saw must be used; saw cuts and large wounds should be trimmed to smoothness with a knife and painted over with white lead, oil paint or tar. This prevents the entry of insects and fungus diseases. One of the most important objects of pruning is to make a good "head" and to have plenty of space between the branches. Each branch should grow on its own space without crossing or becoming entangled in the other branches, so that sunlight and air surrounds every part.

Method of pruning.—Firstly it is necessary to cut away all weak, thin or diseased twigs or small branches, leaving only from a quarter to half an inch of

the twig. All dead twigs and branches must be cut right out. Next, those branches which are growing inwards or which are crossing each other must be cut out or shortened.

It is essential that the cut be made just above a node or leaf which contains a bud, and that the bud should point in the direction in which it is wanted the branch should grow. All branches growing downwards should be cut to an upward bud; branches growing too far to the right or left should be cut to a bud pointing in the opposite direction so as to bring the branch back into its proper slope and position.

The centre of most trees and shrubs should be kept as open as possible so as to allow entrance of air and light. Branches growing inwards towards the middle, or growing straight up the middle should, in most cases, be cut out or shortened back. Pruning is best done when the tree is dormant, that is resting, and this is generally at the end of the dry season, and just before the rains.

Each tree and bush requires special methods and kinds of pruning, but the above notes explain shortly the essential points to remember.

Rules of Pruning.

1. Always use *sharp* knives, secateurs or saws.
2. *Avoid* damaging the branches or bark, and make clean cuts.
3. When cutting a large branch always use a saw, and trim up the cut with a sharp knife so that the wound heals quickly.
4. Cut close above a node, not in the middle of the internode, but be careful not to damage the bud situated in the axil of the leaf.
5. The best time for pruning is just before the rains.

Hedges.

It will be found best, generally, to form a hedge, by planting a double row of cuttings of about eighteen inches apart, with the plants twelve inches apart in the rows.

The young plants should be "stopped" when they are twelve to eighteen inches high. They must not be allowed to develop in height too rapidly, otherwise no breadth and thickness will be obtained and the hedge will always remain thin at the base.

When trimming the hedge it is advisable to trim it to one foot in height and at each successive trimming only allow the hedge to develop six inches in height with a corresponding spread. A thick hedge is thus obtained. The shape of the hedge must be decided upon and a line stretched out as a guide by which to work. Generally speaking it will be found better to trim in the shape of a square.

The hedge should be trimmed with a pair of sharp shears and a sharp curved pruning saw should be used if it is necessary to cut out any large

branches, the cuts afterwards being pared round with a knife, leaving a clean wound which will quickly form a "callus." It is advisable to paint over the end of the sawn-off branch with Stockholm tar, or a paint free from arsenic. These two points should be borne in mind particularly when pruning trees or large shrubs as about ninety per cent of insect and fungus pests enter through an exposed cut and a branch which is badly cut or split will take years to heal over properly.

Control of White Ants attacking living trees.

It may be said, firstly, that no preparation is known at present which may be safely applied to the soil about the roots of trees and which will suffice to discourage the white ants for more than a very limited period. The solutions mentioned below are not considered to be a complete deterrent to white ant attack except as a most temporary measure.

Solutions which are supposed to keep termites away from trees for a short time and which are not injurious to the trees themselves are :—

(1) Copper sulphate, one pound in fifty gallons of water.
(2) Weak solution of Jeyes fluid or carbolic acid.
(3) Tobacco water.
(4) Tar water.
(5) Soap solution.
(6) Tobacco dust placed round the trees is another temporary expedient.

A preparation which can safely be used to band fruit trees from the crown to some eight inches above the ground level, and which will deter termites from ring-barking the trees is coal tar. The tar should be applied directly to the bark and must be renewed each year.

Paraffin and Soap Emulsion.

Formula I.	...	28 pounds soft soap 28 gallons water 12½ pints paraffin } in 100 gallons water.
Formula II.	...	½ pound soap 2 gallons paraffin 1 gallon water } diluted 1 to 10 or 15.
Formula III.	...	5 gallons paraffin. 8 pounds soap. 40 gallons water.
Formula IV.	...	4 gallons water. 13 ounces soap. 2 quarts paraffin.

Formula suitable for spraying shrubs and trees and to be *made up in small quantities* :—

4 gallons water.
14 ounces soap.
1 to 1½ quarts paraffin.

Methods.—The soap should be dissolved in hot water which is well stirred. Paraffin should be added slowly and the mixture very well stirred, and emulsified by vigorously pumping with a syringe or other pump. Boil mixture for about an hour stirring at intervals to prevent the paraffin floating to the top. Allow to cool when the mixture will form a jelly. Before spraying add water to form a quarter of the total bulk.

Mlau Cultivation in the Rufiji Valley

By H. Marsland

MLAU cultivation in the Rufiji Valley has taken on a new complexion with the advent of the Territory's very definite policy for increased production of cotton. Further, the new conception of Mlau possibilities is permitting the production of a useful food supply, chiefly maize, concomitant with the raising of this valuable cash crop.

As the term Mlau is somewhat unfamiliar except in the Rufiji district, and conveys no indication of the type of cultivation which its use denotes, before proceeding further some explanation is necessary. Broadly speaking, Mlau indicates a method of crop production whereby the seed can be germinated in the ground and the crop raised to maturity without the usual necessary adjunct, rainfall. The active principles governing the successful cultivation of Mlau crops are : the height of the "water table" in the soil and the moisture-retaining capacity of the soil. Complete independence of rainfall, from planting to harvesting, is assured if the fall in the water table is slow and does not greatly outpace the downward passage of the roots, otherwise, light rainfall is essential or premature plant senescence is induced with the usual adverse effect on crop yields.

Typical Mlau areas are :—

(a) Those which have been subjected to flooding by the Rufiji river. When the flood subsides a rich deposit of silt is left behind and a clean but heavily fissured surface is presented for cultivation. The sub-soil moisture, or "water table" remains sufficiently high to support such crops as maize and cotton.

(b) Those areas not subjected to surface flooding but nevertheless adequately supplied with moisture by the process of infiltration from the high waters of the river, through a highly permeable sub-stratum of sandy loam superimposed on an almost impermeable layer of clay.

(c) Those areas on low lying banks near the mouths of the delta which are periodically flooded with fresh water caused by the piling up of the river water at high tides.

(d) Pockets or depressions with semi-permeable sub-soils which have been subjected to inundation by heavy rains. As the water evaporates semi-Mlau conditions result, although for such areas subsequent rainfall is essential for the proper functioning of the crop.

It will be observed that typical Mlau conditions are entirely dependent on the caprices of the Rufiji river and although topographical features ensure a very small, but regular acreage annually, the main reliance for the bulk of Mlau land is vested in the height to which the Rufiji river rises : in other words a good flood. Mlau cultivation is therefore highly speculative.

Mlau area fragmented by hoe cultivation.

A typical mlau area planted with cotton and maize.

Daily measurements of the Rufiji river levels have been made at the Experimental Station, Mpanganya, since 1926 until the present day, but a perusal of these records reveals only slight correlation between river peaks and the extent of the inundated areas. We are unable to state, for instance, what the number of flooded acres will be when the river reaches thirteen feet on the gauge as so many factors influence the free passage of the flow between Mpanga on the western boundary of the district, and the sea. Through the ages the main Rufiji channel has undergone many changes. Heavy floods have carved out new channels; old river courses have become blocked; sandbanks have formed and caused deviations; areas once on the north bank are now on the south, and vice versa, and so the ever changing orientation of the main channel continues and the valley has become furrowed with old river beds, lake beds and depressions which are practically waterless in the dry season but potential rivers or reservoirs during high flood. Thus the amount of water which is by-passed by these agencies, together with the rate of flow and duration of the spate, all influence the extent to which the surrounding country may be flooded, irrespective of the actual height of the river recorded at any one point.

The peak level on the river gauge, which may be anything from ten feet to sixteen feet above dry season low level, generally occurs about the middle of April after which the waters steadily decline during May. From June onwards, the level falls rapidly until a more or less regular low level flow is reached in August. This continues until December or January when again an erratic rise begins, culminating with the maximum in April.

Mlau cultivation in the Rufiji valley has been practised at least as long as the present tribal elders can remember and the technique evolved appears to serve the purpose adequately.

As the waters recede from the flooded countryside the Mlau areas become revealed. If the resultant surface of the land is clean and free from weeds it is left untouched until the skin or surface layer of alluvium has completely dried out. The surface cake may be anything from one inch to five or six inches in thickness, and as the drying process proceeds, cracks and fissures appear, giving the appearance of a large expanse of crazy paving. This type of Mlau land is eagerly sought after by native cultivators since no tedious effort is required prior to planting operations and in addition post-planting effort is reduced to a minimum as weed growth from now onwards is exceptionally sparse, if any. The surface cake having dried sufficiently, planting operations are commenced. At the location of each seed hole the surface cake is first lifted off and placed aside. A stout pole (local name *rusinde*) two to three inches in diameter and roughly sharpened, is now thrust vertically into the soil to a depth of four to six inches and after a dextrous circular movement is withdrawn leaving a neat funnel shaped cavity at the bottom of which the seeds are dropped and lightly covered with a moist mixture of soil and sand. Alternate rows of cotton and maize are generally planted until the

area is covered. After germination of the seed the whole area is hoed by hand until the cakes are broken up into small fragments. Although the surface is still devoid of weed growth this operation is considered essential in order to reduce evaporation of the soil moisture. In this operation we have an unconscious application by the native of the theory of capillarity and the movement of soil moisture.

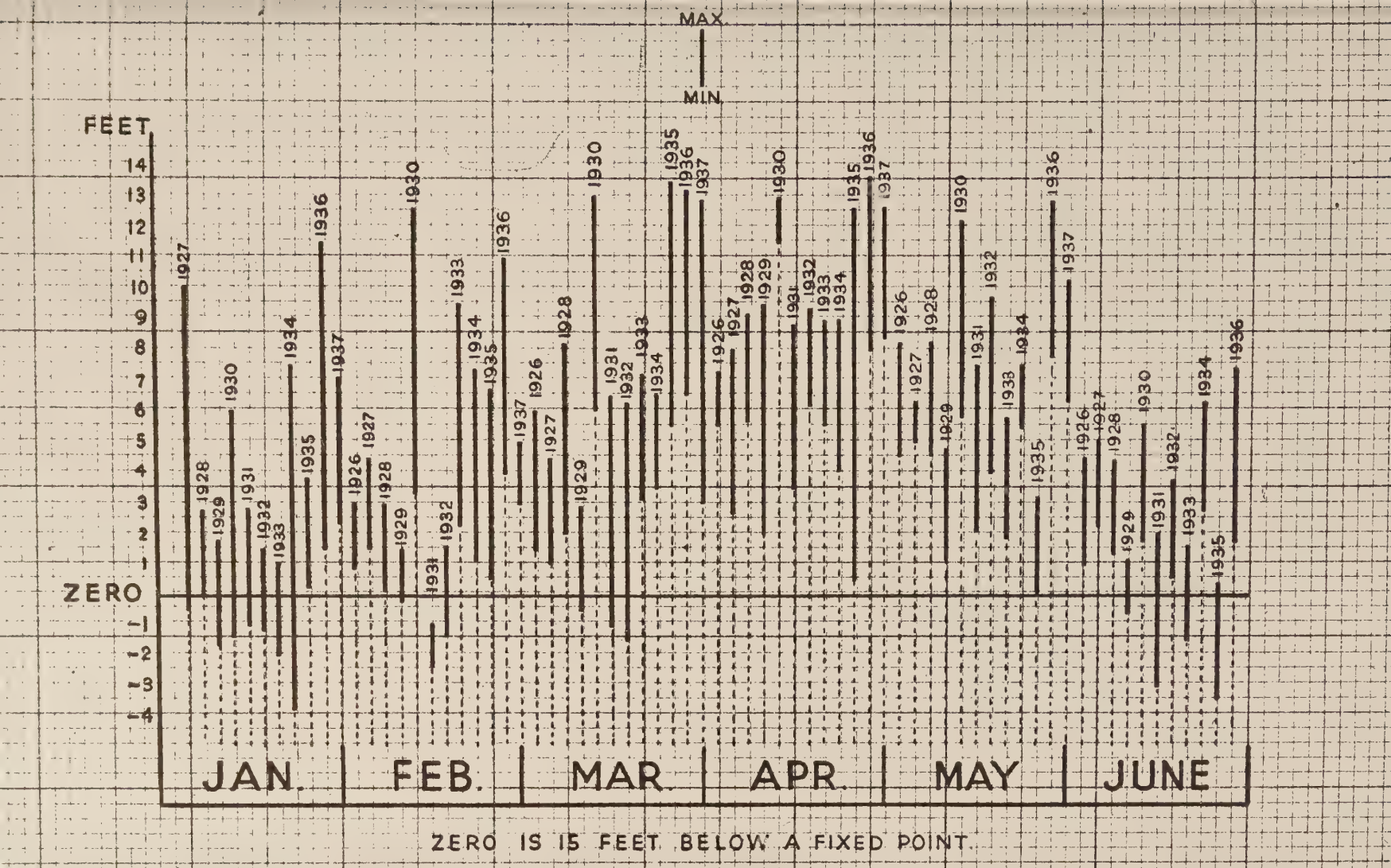
The seedling stage of the crop is beset with a number of evils, foremost amongst which are depredations by such insects as crickets and millipedes. The flashes of vivid green on a perfectly clean surface cannot fail to attract such pests, indeed, what could be easier than for a hungry millipede to fall into a seed hole and lie contentedly gorging himself on the tender seedlings? To provide for such contingencies a very generous supply of seed is deposited in each hole with the hope that marauding insects will have fed to repletion or satiation before the contents of the seed holes have become exhausted. Once past the seedling stage there is little to fear and one thousand tons of some of the finest cotton in the Territory were produced last year under Mlau conditions.

It is unfortunate that not all well flooded Mlau land will expose a reproduction of the previously mentioned conditions when the river has subsided. Instead of the anticipated superficial alluvial deposit it may happen that scouring has occurred or that several inches of sterile sand have been laid down over the surface. In the former case the land may be ruined for that season but in the latter, much larger planting holes have to be made by first scraping away the sand until the moist soil below is uncovered for the reception of the seed.

Turning now to those areas which have undergone only partial inundation or which derive their moisture by infiltration from the river. By the time these lands have dried sufficiently to allow cultural operations the surface is covered with a dense growth of tall grass. The grass is first cut, allowed to lie and dry, then burned *in situ* after which planting is done with the aid of the *rusinde* in a similar manner to that previously described. Considerably more effort is required with this form of Mlau land as, quite apart from the initial clearing, constant after-cleaning is necessary to keep down weeds, and consequently the appeal to the native is not quite so marked as in the first case.

Mlau land caused by the piling up of the river water due to high tides is chiefly used for the cultivation of rice. Depressions or pockets due to rain water stagnation may, with a modicum of good fortune, suffice for maize cultivation but they are unsuitable, in the main, for cotton.

The bulk of the rainfall in the Rufiji district is precipitated during the period December to May so that ample opportunity for the production of rain grown crops is afforded before the possibilities for Mlau need even be considered and the cultivator has therefore "two strings to his bow." Furthermore the sequence of events is so favourably disposed in many instances as to permit


MAX.
MIN.
FEET
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ZERO
-1
-2
-3
-4
JAN.
FEB.
MAR.
APR.
MAY
JUNE
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
ZERO IS 15 FEET BELOW A FIXED POINT.

the interplanting of cotton in the ripening rain grown rice—the staple crop of the Rufiji—in May and June. Thus the cotton crop is barely off the ground in December or January before the planting of maize and rice again command attention so that throughout the whole twelve months of the year the Rufiji cultivator should find his time fully occupied with his holding.

I have outlined a series of events which if consistently reproduced year by year would indicate the Rufiji valley as being a veritable agricultural Eldorado, but, as I have previously pointed out, Mlau conditions are entirely dependent on the Rufiji river, the most undependable factor of all. Although the trend appears to be towards greater floods in the future it can happen, and frequently has happened that the flood, as far as extensive Mlau purposes are concerned, has failed, or that the spate, instead of proving a blessing, has washed away thousands of acres of crops by arriving inopportunely. It would appear therefore that Mlau profits should be regarded as bonuses on a sounder investment, rainfall production.

Concerning the Banangoma and Basumba Batale Societies of the Bukwimba Wasukuma

By T. M. Revington

THESE two societies have existed from time immemorial and are still essential tribal institutions in that they act, in some measure, as a brake on the power of the chief. Their members are not unlike justices of the peace or the Upper and Lower Houses in any bicameral constitution. They are not moribund but are respected by ruler and ruled alike and it need not be considered that they are redundant because of the dual mandate nor because the chief has statutory powers; on the contrary more than ever are they valuable to ensure that all that is best in indigenous tribal custom is kept in the corporate life of the people and not upset by an exotic civilization. These societies are flexible and adaptable as are all Bantu institutions. This adaptability and a sense of humour are most valuable gifts of the Bantu race.

The Banangoma are selected by the chief (*mtemi*) from among his brothers and near relations and he can therefore rely on their loyalty and support. They constitute the House of Lords.

Formerly they had considerable influence in the affairs of the country and had great authority, which has naturally waned in recent years. Before the coming of the European they could settle any dispute in conjunction with the chief or on their own authority—even cases of homicide (*nzigu*) for which the compensation was five head of cattle. Most other crimes had but one punishment, one bull and five hoes—the chief in both cases receiving his share, the remainder being the property of the Banangoma and the plaintiff.

The Banangoma had and have other duties. Just before the rains, some dozen of them would be ordered to consult certain old men, whose insight into the future was believed to be equal to their knowledge of the past, to enquire into the scarcity or abundance of the new year's crops and to receive from them general agricultural instructions and medicine to ensure good harvests. This ceremony takes three days to perform and on the fourth the Banangoma return with the medicine; on leaving they are not allowed to look back or speak until they have reported to the chief. Each man learned in the art of prognosticating the future receives fifty hoes. A few days later the Banangoma leave the chief and tour the chiefdom, giving each man some of the medicine for his fields. Any man found breaking the ground before the medicines reaches him loses his hoe and is fined twenty cents or one fowl. Every field is visited and the Banangoma take turns in carrying the medicine tray. The Banangoma are honoured particularly whilst engaged in this manner and are hospitably received everywhere. The ground is covered in about a month. The meeting of the Banangoma and the wise man is termed *milango*.

On the return of the Banangoma the ceremony of cutting the chief's hair is performed, a rite accompanied by much beer, dancing and feasting. The chief then exhorts the people to cultivate with energy. This ceremony is exceedingly important.

When the chief dies it is the duty of the Banangoma to bury him, assisted by his wives, his mother and close relatives.

If a chief has to be chosen they consult together and usually choose the eldest son of the deceased, but they would not flout the deceased's known wishes in the matter.

To think that this society wields the substance of power and the chief the shadow is incorrect; it is the repository of tribal custom and therefore supports the chief and uses its influence in removing anyone who threatens his authority. In former times such a man would be put to death—the execution being performed by a club specially kept for the purpose.

The members of this society—if such it can be called—are the principal advisors of the chief and he would not and could not act without them.

The Basumba Batale, of which there may be from four to eight for each village or group of villages (*gunguli*) are elected by the younger members of the tribe to manage local affairs. They have many duties, the most important of which is the parcelling out of land which is in reality the property of the chief.

A few instances of their manifold duties will be of interest.

1. The organization of communal labour. Each able-bodied man can by tribal custom be called upon in special circumstances to do ten days' communal labour a year for which beef and salt is given by the native treasury.

2. The general discipline and good manners of the people is their responsibility and breaches of the code lead to punishment—usually a fine.

3. The co-operative assistance of unfortunates—such as the rebuilding of a burned-out house, the carriage of goods and cattle of persons wishing to move, the care of the destitute persons, etc. This labour is carried out free when it is not possible for the recipient to supply meat and beer.

The society has the right to fine and does so if its orders are not carried out. The fine usually consists of a fowl, a goat or two or in flagrant cases a bull. Should a fine not be paid the culprit is either told to move from the *gunguli* or is placed "in Coventry" until such time as he obeys.

The Basumba Batale from time to time pool the fines and call a feast to which all the village is invited, including the delinquents who have paid fines. This is considered by all to be in payment for work done for the aged and others who cannot help themselves nor pay for labour.

The society were recruiters in time of war and to this day find men if required to repulse Masai raids or to serve with the police as trackers. It was paid by the chief for this duty. It did and, it is believed, does now banish persons believed to practice witchcraft and it has jurisdiction over its own members.

The society does not set itself up as being superior to the local headman, but assists him in his manifold duties which without the Basumba Batale he would be unable to perform.

There is no friction between the Banangoma, who deal direct with the chief, and the Basumba Batale who are concerned primarily with the people. One is complementary to the other and must in years past have been legislature and executive, under the chief.

This brief note gives some idea of the potential value of the two societies which are nearer to the Sukuma than the chief and his headmen.

Some Notes on Sea-fishing near Tanga

By G. W. Hatchell

READERS who have studied the interesting notes contributed by Commander Cole to the third number of *Tanganyika Notes and Records* may be interested in the following observations on sea-fishing near Tanga.

Tackle.—The possibilities of encountering really big fish off Tanga are considerable and the fisherman should provide himself with a really good seven or eight-inch reel fitted with a check and a brake and capable of taking up to four hundred yards of thirty-six thread line. The writer has had two hundred and fifty yards of line taken off his reel in a matter of seconds and lost what there was every reason to suppose was a big sail-fish for lack of sufficient line and an efficient reel. A wire trace of at least four feet with swivels at both ends and, if possible, one in the middle should be used between the bait and the line. It has been found that many of the types of trace-wire obtainable from fishing tackle dealers are inclined to kink and rust. A single strand from the light wire rope used for the rigging of small sailing boats has been found to be quite satisfactory, economical, easy to handle and flexible.

It has been found advisable to use a sinker since without it, particularly when the sea is choppy, the bait is inclined to hop from wave-top to wave-top. A four-ounce lead will keep the bait about two feet below the surface but the lead must be attached to the trace and on no account to the line: fish frequently attack the lead and if it is attached to the line both trace and bait may be lost if, as frequently happens, the line is bitten through.

A good knife and a gaff are of course essential and it will be found that a couple of big sacks into which the fish can be slipped tail-first as soon as it is brought in-board will save a lot of unpleasant mess in the bottom of the boat. Moreover it is very much easier to release the hook from the jaws of a sharp toothed fish if his wriggling is controlled.

Bait.—The writer has used a variety of artificial bait: spoons, minnows and the like: the results obtained are set out in the table at the end of these notes. Natural bait has not been used to any extent because of the difficulty of obtaining it at short notice and of keeping it sufficiently fresh.

Trolling.—All fish referred to in these notes were caught while trolling from a motor boat with either two rods or one rod and a hand line. The latter consists of about two hundred yards of stout plaited green blind-cord.

Trolling was carried out at a speed of between five and six knots. This speed was arrived at after considerable experiment and was found to be the most suitable for general purposes. It is possible that for sail-fish, tunny and the like a higher speed might be necessary.

Fishing Grounds.—The reader is referred to the chart at the end of these notes. The grounds so far investigated lie along the eastern edges of the barrier reefs of Fungo Nyama, Neuli and Karange; in the main Ship Channel, the Yahbe Channel and the mouth of Kwale Bay. Little success has been met with inside Tanga Harbour or in Tanga Bay but further experiment with different baits trolled at varying speeds is necessary before it can be said that these areas are not likely to be fruitful.

For the grounds lying east of the barrier reefs a good seaworthy, full-powered boat is required for, with the exception of a month between November and December and a week or two in May a big swell, frequently with a nasty lop running across it, is encountered.

The figures given in the accompanying tables refer to catches made during the months of October, November and December 1936. As the north-east wind set in with increasing force towards the end of December fishing became more and more difficult owing to the roughness of the water, but on the few days when weather conditions were favourable there was every sign that the fish had migrated for, while in the earlier months it was unusual to return without two or three fish, as December advanced it became more and more usual to return empty handed.

During the months under review fishing was undertaken on twenty-seven days of which eight were blank. Owing principally to unfavourable conditions fishing was undertaken on only nine days between January and May 1937 and of these four were blank.

During the months of October, November and December 803½ pounds weight of fish were caught which included—

	Pounds	Heaviest pounds	Average pounds
Kalambisi	307	... 45	... 11
King-fish	190	... 29	... 13
Baracouda	70	... 14	... 14

Twenty-five fish were caught on a rising tide and thirty-eight on a falling tide, while seventeen were caught on a spring tide and forty-six on a neap tide, but since the proportion of neaps fished to springs is as three to one springs would appear to be slightly more favourable.

The fact that more fish were caught on a falling tide is somewhat surprising: it was the writer's impression until figures were examined that a rising tide should be more favourable.

It is hoped to keep careful records in the future and to be able to place the results at the disposal of readers of this journal from time to time.

TANGA FISHING GROUNDS

KWALE I.

Kwale Bay

ULENGE

Light House

Sand Bank

Wamba wamba

FUNGO NYAMA
Sand Bank
awash

1½ awash

Red Buoy

Beacons

Tanga Bay

Black Buoy

Red Buoy

Ship Channel

TANGA

awash
NEULI
Sand Bank

YAMBE I.

Yambe Channel

Mwambani Bay

KARANGE I.

Very Steep

Reefs

Fishing Grounds referred to in Notes

Depths in Fathoms

SCALE

0 5 10 Sea Miles

SURVEY DIVISION. T.T. 2.3.58

BAIT	October										November							December								Grand Total
	King-fish	Baracouda	Kambisi	Chewa	Kihubi	Gar-fish	Kungu (Snapper)	Sehewa (Yellow F'd Tunny ?)	Mkokwe	Total	King-fish	Baracouda	Kambisi	Chewa (Rock Cod)	Gar-fish	Chache (Springer)	Total	King-fish	Baracouda	Kambisi (Horse Mackerel)	Kolekole (Horse Mackerel)	Njombo (Sea Bass)	Kungu (Snapper)	Kihubi	Total	
Hardys 4″ Diving and Darting Bait	–	–	3	–	–	1	–	1	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5
,, 5″ ,, ,,	–	–	3	–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3
4″ Wilson Spoon	–	–	1	–	–	–	–	–	1	2	1	2	–	–	–	1	4	–	–	–	–	–	–	–	–	6
6″ Record Spoon	–	1	–	–	–	–	–	–	–	1	5	1	4	1	–	–	11	2	1	12	1	2	–	1	19	31
5″ Record Spoon	–	3	–	–	–	–	–	–	–	3	1	–	1	–	–	–	2	–	–	–	–	–	–	–	–	5
5″ Brass Spoon	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
4″ Oval Copper Spoon	–	–	–	–	–	–	–	–	–	–	3	–	1	–	1	–	5	–	–	–	–	–	–	–	–	5
6″ Herring Bait (Hardy's)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	1	1	–	–	–	4	4
5½″ Trixoreno	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	1	–	3	3
Total	–	4	7	–	–	1	–	1	1	14	11	3	6	1	1	1	23	4	2	14	2	2	1	1	26	63
Outside barrier reef	–	–	7	–	–	1	–	1	1	10	11	2	6	1	1	–	21	–	1	14	1	2	1	1	20	51
Inside barrier reef	–	4	–	–	–	–	–	–	–	4	–	1	–	–	–	1	2	4	1	–	1	–	–	–	6	12
Rising tide inside	–	3	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3
Rising tide outside	–	–	4	–	–	1	–	1	1	7	2	–	3	–	1	–	6	–	–	6	–	1	1	1	9	22
Falling tide inside	–	1	–	–	–	–	–	–	–	1	–	1	–	–	–	1	2	4	1	–	1	–	–	–	6	9
Falling tide outside	–	–	3	–	–	–	–	–	–	3	9	2	3	1	–	–	15	–	1	8	1	1	–	–	11	29
Falling Neap tide	–	–	3	–	–	–	–	–	–	3	6	2	2	1	–	1	12	3	2	8	2	1	–	–	16	31
Rising Neap tide	–	–	2	–	–	1	–	1	1	5	1	–	3	–	1	–	5	–	–	3	–	1	–	1	5	15
Falling Spring tide	–	1	–	–	–	–	–	–	–	1	3	1	1	–	–	–	5	1	–	–	–	–	–	–	1	7
Rising Spring tide	–	3	2	–	–	–	–	–	–	5	1	–	–	–	–	–	1	–	–	3	–	–	1	–	4	10

Ngindo Honey-hunters

By A. T. Culwick

IN THE north-eastern foothills of the Mahenge *massif* there lives an isolated group of Ngindo, a branch of the once powerful tribe who figured so prominently in the Maji-Maji Rising of 1905. There are only a few scattered hundreds of them, most of their kinsmen living a long distance off over the Liwale district border. For geographical reasons they have been little influenced by the outside world and still live the life of their forefathers. They have no stock: the tsetse-fly prevents that. They grow a few crops, but on the whole dislike the settled life that agriculture entails, preferring rather to hunt game with poisoned arrows and above all to wander off, sometimes for weeks at a time, in search of honey.

Honey is the keystone of their economy. The Mgindo thinks in terms of honey, his children when lucky are smeared with it, his house smells of it, and his conversation invariably turns to "that hollow tree two days' walk away where the bees are."

His greatest friend is the honey-bird whose call never falls on deaf ears. Down goes his hoe and off goes the Mgindo, fire-stick, spear and axe in hand, to follow the bird. He may travel for days, oblivious of the fate of his crops, sleeping up a tree at night, on and on till at last the bird leads him to the bees. He then sets to work to cut down the tree and take the honey, never forgetting to put aside some of the grubs for the bird.

The Ngindo also make beehives and hang them up in trees, not, as one might imagine, near the villages, but hidden away in the furthermost parts of the forest, far from paths and human habitations. How they ever find them again is incomprehensible to the stranger, but they are never baffled. They can walk with unerring accuracy for miles through trackless forest to *their* trees and consider the blazing of a trail superfluous.

Their beehives (*kungwa*) are made of *miombo*. The bark is stripped off for a length of four or five feet and is then formed into a cylinder whose edges are held together with wooden pegs. One end of the cylinder is closed by a flap of bark bent over and held in place with a piece of string passed through holes pierced in the flap and the wall of the cylinder; the other end remains open. The hive is placed in a tree with the open end rather lower than the closed one to prevent rain getting in, and is left there until the bees find it. Sometimes aromatic herbs are placed inside it to attract them but this practice is not universal. When the honey is ready the owner of the hive opens the closed end and blows in smoke from a grass torch (*chenge*) to drive out the bees.

Then he takes the honeycomb and places it in a skin bowl (*ngupiru*) to which is tied a long grass rope for lowering the booty to the ground. The bowl

is usually made of hartebeeste skin, stretched while fresh over the bottom of an upturned beer-pot and allowed to dry in that position. It is then cut to the required size and provided with a rim of split bamboo, four tongues of skin being left for attaching the rope. The Ngindo always turn the hairy side of the skin to the inside of the bowl and refrain from removing the hair, for a rather delightful reason. They say the honey sticks to the hair for a long time and it is a treat for the children to rub their fingers on the sticky hair and then lick them!

When all the comb has been collected the honey is squeezed out by hand into gourds or a bark bowl (*likungwa*) and is usually eaten uncleaned—dead bees and grubs and all. The Ngindo prepare the wax by boiling it with water in earthenware pots, allowing the mixture to cool till the wax solidifies and then pouring it into a filter (*kung'untu*) of plaited grass. They grip the filter near the top with two slats of wood and slide these down towards the bottom to express the liquid. The filtrate is thrown away but the wax is remelted in an earthenware pot and cast into lumps for sale to traders.

A curious thing about these very primitive people is that in spite of their isolation, numbers of them have travelled far. Most of their headmen have been to the coast and are well acquainted with European ways. One finds, perhaps, that the typical honey-hunter to whom one is talking has spent several years in government service as a provincial commissioner's messenger in a distant province. A handful of them are even literate. But little difference does it make in the end. The lure of a wild roaming existence calls them home, and no sooner do they return to the tribe than all memory of the outside world and its ways seems to fade from their minds as once again, fire-stick, spear and axe in hand, they set out on the trail of the honey-bird.

Church Missionary Society, Ngambo

(A translation of the account of the history of the Church Missionary Society in the Ngambo area of Mwanza District supplied by Chief Chasama of Msalala and confirmed by reference to the reports of the Church Missionary Society for the years 1885 and 1886.)

By A. C. Davey

WHEN the missionaries first arrived in this country they made their headquarters at Buyubi in the Tabora District, about the year 1880. Later they left for Burambo in the area of Chief Milambo, who on their arrival directed them to proceed to Msalala Ndogo as the people there had no clothes to wear. For this reason the Europeans came and made their headquarters in my area, at that time under the rule of Chief Songa. The missionaries made their headquarters at Uzilima and their names are as follows :—

NATIVE NAMES.	CORRECT NAMES.
1. Bwana Hanitani	Bishop Hannington
2. ,, Godi	Rev. G. C. Gordon
3. ,, Eis	Rev. R. P. Ashe
4. ,, Waishi	Mr C. Wise
5. ,, Sitokes	Mr C. Stokes

Mr Stokes did not remain in my country ; it was his duty to make necessary transport arrangements for his friends and their supplies. Soon after these Europeans settled down Mr Stokes left for the coast to fetch supplies, leaving four Europeans at Uzilima. After one year at Uzilima the Europeans left for Uzinza where they were ordered by Chief Loma to make their headquarters at Butaranda, as they had expressed their intention of proceeding further ahead.

When the Europeans left Msalala Ndogo (Uzilima), they left a considerable quantity of property behind for safe custody.

After a short stay at Butaranda the Europeans left for Usukuma and made their headquarters at Kageye where there was a large Arab settlement.

Shortly after this my elder brother Sonda (Chief of Msalala Ndogo) was killed in a tribal war and I succeeded him : this would be about 1885. Upon my succession I collected all the property of the missionaries and sent it to them at Kageye. They were so pleased with my action that two of them returned and made their headquarters with me—they were the Rev. Mr Gordon and Mr Wise. They erected a school for teaching children, but after a short period they left for Ulambo to obtain material for building a dhow for transport purposes between Nyamtukuza and Uganda. When the material arrived Dr Mackay came from Kageye to build the dhow. The dhow was built at Nego

in the chiefdom of Urima and on completion it was taken to Uganda by Dr Mackay.

The school at Uzilima prospered for four years after which my relations caused considerable mischief because I had befriended the missionaries. A tribal war started, I was arrested, deposed, and sent to the area of Mtemi Milambo. Ngata was then made the Chief of Msalala Ndogo.

Ngata was at cross purposes with the missionaries owing to his extortionate demands. At this time Dr Mackay returned from Uganda with the dhow which had been built at Urima. Dr Mackay landed at Nyamtukuza and immediately instructed his two friends to leave Uzilima and build a station at Chafuma (twelve miles from Uzilima) in the area of Chief Makolo, who was subordinate to Chief Loma.

A school was erected for the purpose of teaching children and at the same time Dr Mackay built a small steamer as the dhow was not large enough for mission purposes.

Later, Mr Wise had some difficulty with his friends and Mr Stokes came and took him back to Mwanza to the village of Bugalika. At this time the Germans had not arrived.

At Msalala Ngata ruled for three and a half years when Mr Stokes arrived from Egypt with a friend to look for an American subject who was known as *Bwana Bahasha*. They passed on to the coast. One year later the Germans came and ruled the country. The missionaries stated my case to the Germans and explained how my friends had deposed me and the reasons why. The Germans reinstated me as Chief of Msalala and I have been the chief there ever since.

Five missionaries died at Chafuma. They were Dr Mackay, a European on his way from the coast to Uganda—name unknown, a schoolmaster known as *Bwana Barabosi*, a European immediately after his arrival at Chafuma, and one European whose name is not known.

After the death of these Europeans the station was closed down and all the property was taken away by the Rev. Mr Gordon.

Note.—It is interesting to note that the remains of Dr Mackay were disinterred in 1927 during the Jubilee celebrations of the Uganda Mission and reinterred in the Cathedral burial ground on Namirembe Hill (Kampala), Uganda.

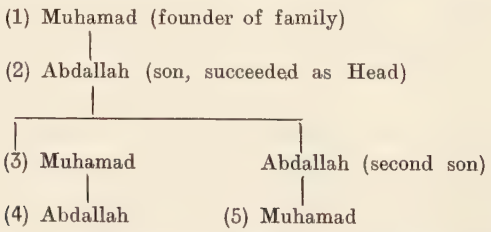
Mr Stokes subsequently started trading at Ibalagera in the Nzega District, and after the death of his two assistants he entered the Belgian Congo where he was shot by the authorities for the alleged supplying of arms to natives. His death was the subject of correspondence between the British and Belgian Foreign Ministers. This occurred about 1895.

Arabic Family and Individual Names

By Arthur E. Robinson

SOME years ago I gave a lecture on the Bible in the light of archæological discoveries since 1919. It was my purpose to show that most of the Biblical statements (including the flood) could be either definitely substantiated or traced to records of which Abraham and his descendants had knowledge. In his book *Abraham* Sir Leonard Woolley has dealt with the results of recent excavations at Ur. One of the most vexatious questions in these researches is the longevity of the patriarchs. Another is the mention of the camel at such an early period, i.e. c. 2000 B.C., as a domesticated animal. This latter I have tried to explain in my paper on "The Camel in Antiquity" and although Sir Leonard Woolley states that there is no historical record in the tablets of Sumer he assumes that the animal was known and that it is of Arabian origin. Until some record of the animal which can be dated to such an early period is found conjecture or assumption seems just as misleading as it was two hundred years ago in respect to the domesticated horse.

With regard to longevity I endeavoured to explain this in my lecture by advancing a theory that the name Shelah (Gen. xi, 14) was that of a man who founded a family or clan of that name. His direct descendants retained pre-eminence for four hundred and three years. After that period an indirect descendant Peleg succeeded. Those who may be interested in this subject will find it dealt with by Sir Leonard Woolley (*op. cit.*, pp. 268 *et seq*) in a much more able manner than I could do so. Sir Harold MacMichael some years ago prepared exhaustive genealogical trees of most of the Arab tribes of the Sudan. Some of these he has published in his well-known work. From these and my own researches it would seem to have been a general rule for cousins to marry. The eldest son took his grandfather's individual name thus :—



N.B.—Number five did not take the grandfather's name as he was not the heir-apparent and the name taken is that of the great-grandfather. Possibly to save confusion.

In practice numbers two, three and four were all called Ibn Muhamad or Ben Muhamad (that is son of Muhamad) until they succeeded to headship. In the event of number four dying before succession or without male issue, his brother (number five) or uncle (number six) became known as Ibn

Muhamad or Ben Muhamad although both real names were Abdallah ben Abdallah. In course of time the line of relationship between number one and the living headman or sheikh became so attenuated that a new name appeared. At the present time the King of England claims the crown by hereditary right from William the Conqueror. By means of our written historical records the dynasties can be determined but this is not the case with genealogies transmitted orally. Thus the present King of Arabia has perpetuated the old practice. He is known as Ibn Saud. His real name is Abd-el-Aziz ben Abd-u-Rahman. His ancestor Saud died in 1742. Of late years it has been the practice for educated Moslems to adopt family names and have three names thus Muhamad ben Rashid (father) Ismail (family name). If given a title such as Bey or Pasha they use the name of the family and Muhamad ben Rashid Ismail becomes Muhamad Pasha Ismail. I have avoided using actual names in these examples. This system of nomenclature has been noticed also among Islamicized African natives who adhered to matrilinear descent and succession.

Of course I do not mean to convey by the foregoing remarks that the Biblical story of the Creation or Archbishop Usher's chronology can be accepted as accurate.

Native Materia Medica

By W. D. Raymond

III.—The Deliriants.

Though I go bare, take ye no care,
I nothing am a-cold;
I stuff my skin so full within
Of jolly good ale and old.—*W. Stevenson* (c. 1560).

ALTHOUGH alcohol in its immemorial history has received all manner of epithets from devil to the elixir of life itself and although it has had and still retains an important position in European medical practice there is nothing to suggest that the African classes it as a medicine. However, in its manufacture under a variety of forms he displays the same ingenium and accuracy of observation that have already been noted in the consideration of his arrow poisons and medicaments, so that a brief description of the main types of alcoholic beverages can be included conveniently in a description of native materia medica.

Beer as a beverage is as old as civilization itself, and both supposedly had their origin in the wild barley growing on the banks of the Tigris, Euphrates and Nile. The people who appreciated this fortunate chance adopted a settled in preference to a nomadic life. The establishment of arts and crafts and an increase in population naturally followed. The African uses a variety of grain for the preparation of his native beer, *pombe*. Practice varies according to locality and brewer. In the capital millet is employed and this is germinated for three days after which it is sun-dried and known as *kimea*. The *kimea* is ground and mixed with ungerminated flour, added to hot water, allowed to stand, and boiled. After cooling the liquid is decanted and mixed with a suspension of *kimea* flour in cold water. Fermentation sets in, more flour may be added and then the whole is shaken in bags and roughly filtered. After storage overnight the *pombe* is ready for sale the next morning. The whole process occupies several days and is a work of skill.

Brewing may well have coincided with the genesis of civilization but we have had to wait some six thousand years, until the close of the last century, for an understanding of the process. During the germination of grain a substance, diastase, is produced which has the power of transforming starch into the sugar maltose. The brewer uses short malt to obtain body in his product; the distiller aims at the production of alcohol and employs long malt. After the production of maltose the next step is its conversion into alcohol and carbon dioxide by the aid of yeast. It is not clear from the above description how and when the yeast is added. In some parts of Tanganyika yeast from previous brewing is added but this process is not said to be employed in

Photo by
W. Duncan

Banghi pipes.

Photo by
Dr J. Buchanan

African alcohol still.

Dar es Salaam. The sprouted millet certainly contains wild yeasts and will ferment sugar so that perhaps the brewer relies on this source or possibly the use of bags as rough filters may transfer the yeast from one brew to another.

The product may be properly claimed as a food since it contains no less than seven per cent by weight of solid matter. It is an acid drink and its acidity due mainly to lactic acid amounts to some 0·6 per cent. In alcoholic strength it compares roughly with ordinary dinner or pale ale, nine to eleven per cent of proof spirit.

Tembo is a stronger drink prepared from the unexpanded flower head of the coconut palm. The end of the head is cut off, bent and a calabash attached. The juice collects overnight and in the morning the liquid is removed, a further slice of the flower head cut off and the calabash replaced. Collections are made twice or three times a day until the whole of the flower head is consumed. A consequent result is the loss of the yield of coconuts. The liquid that collects ferments spontaneously and rapidly. It increases in alcoholic strength up to a maximum and then goes sour. The sour wine is used as a form of vinegar with food. In the fermenting liquid numerous yeast cells may be observed and the alcoholic strength of a sample of *tembo* observed over a period was as follows :—

	Per cent proof spirit
Day of purchase (perhaps twelve hours old) ...	14·1
Second day	16·1
Third ,, ...	16·1
Seventh ,, ...	16·1

The wine thus compares in strength with heavier beers and strong ales which may contain up to twenty per cent of proof spirit. Its consumption to-day is not so excessive as it was according to Warburg when writing in 1890(1). He states that *tembo* was not only extensively prepared in the whole of the coastal belt but everywhere where the palm will grow. In every village low growing palms were planted especially for this purpose and in Tanga, especially by the Digo, enormous quantities of the wine were consumed.

The most unpromising material may be utilized by the African to prepare his alcoholic drinks. The extremely astringent fruit of the cashew-nut tree (*Anacardium occidenta* L.) is the source of a not unpleasant tasting wine.

The African also caters for the more depraved taste that craves for ardent spirits. A primitive form of still is employed and the product which ranges in strength from ten to ninety degrees of proof sells under a variety of names as *moshi* or *brandi*. It is commonly containing seventy-five per cent of proof spirit and thus approximates in potency to whisky. Owing to the illicit nature of the drink the exact source of the distillate is difficult to determine with accuracy. Generally a special brew of *pombe* is said to be employed. The form of still in use in Tanganyika is illustrated on another page and it is amusing to note the modern application of the empty petrol *debe*.

Hemp when grown in tropical and sub-tropical countries differs so widely in medicinal properties from the same plant grown in Europe that for long it was regarded as a separate species. This is due to the production by the plant of a resinous body which has an intoxicating nature. When the plant is smoked it produces hallucinations, usually of a pleasurable nature, and the patient may show no outward signs of excitement or he may be continually laughing, singing, talking or furiously delirious. This stage is followed by one of narcotism, usually with dilated pupils. Commonly there is tingling and numbness, or, in severe cases general anaesthesia may be present(2). The drug is commonly known as Hashish and the word assassin (*hashshâshîn*, Arabic Hashish-eaters) is derived therefrom. Originally the term was applied to a Shiite sect active in Syria and Persia in the eleventh to the thirteenth century. When the sheikh of the sect required the obedience of his selected bodyguard for work of assassination he intoxicated them with hashish. In this state they were introduced into the splendid gardens of the sheikh, surrounded by every form of sensual pleasure and after such a foretaste of paradise evidently within the power of their ruler they were prepared to obey his slightest command(3). In Tanganyika the drug (*Banghi* Sw.) is usually smoked in the form of the dried leaves and small stalks or the flowering tops. A few of the types of pipes in use are illustrated elsewhere.

Reichard(4) speaking of the Nyamwezi says that the evil-smelling smoke is sucked into the lungs and presently the smoker, with impassive face staring at his surroundings, makes curious noises and coughing sounds into his pipe. These sounds are a matter of habit rather than the effects of the drug. With frequent use (and a hemp addict is seldom weaned from his vice) the nervous system is shattered so much that the Nyamwezi usually apply the word *njemu* (hemp) to the senseless person although they have another word for insanity.

More commonly employed appears to be various species of *Datura* (*Mnanaa*, *mnarana* Sw.), the drug surmised to have been employed in the Temple of Delphi to induce intoxication in the person delivering the oracle. An interval after taking the drug, commonly not more than half an hour, the first symptoms appear which in order are dryness of the throat, giddiness, staggering, as if intoxicated, and delirium. The voice becomes changed and vision is indistinct. The patient is restless, wanders about, grasps at imaginary objects and eventually soper followed by coma results. This may be rarely succeeded by death but more often the patient recovers. The pupils are widely dilated throughout the illness(5).

In Tanganyika the drug appears to be employed both as an intoxicant and for the purpose of stupefying victims. Its use for the former purpose is somewhat unique, but is supported by reports from widely distant parts of the Territory. Commonly it is added to *pombe* to enhance its intoxicating powers. The active principle is related chemically to cocaine, but as far as the writer is aware it has no habit-forming effects. Whether the African

reacts differently to Europeans is unknown. In Lithuania and Latvia extracts from scopolia roots, a plant containing the same alkaloids as *datura*, are still used as an intoxicant in order "to make good friends drunk, and to enjoy oneself with their extravagant caprices, their boisterousness and their excited mood."(6) Possibly *datura* is used locally for a similar purpose.

The powdered seeds are sometimes used to facilitate robbery and there is little doubt that curious happenings near Biharamulo were caused by this drug, although actual supposed specimens of the secret powders there employed when examined failed to reveal its presence. As the secret powder was without any physiological action doubtlessly the real drug had not been obtained. A picturesque African description(6) of one of these events is worth quoting: "Hearing the drunken noises increase I went to investigate their cause and was informed that thieves had poisoned some Nyaruanda and now they were on their way to the police camp. Arriving there I found a crowd of people surrounding them and behold to my surprise the Nyaruanda were without sense, some were throwing themselves on the ground, some were eating grass, some were grovelling in the dust while others were snoring as if afflicted with epilepsy. Four of their six boxes had been stolen." In Bukoba it is a seasonal occupation of certain natives of that district to entice travellers to a meal and a convivial bowl of *pombe*. The victims become stupose or at times maniacal and while in this state they are deprived of any possessions which their hosts deem worthy of acquisition. The Medical Officer reported that he had examined victims some time after their illness and found their pupils dilated and markedly inactive to light(7).

Reports concerning the use of two other plants, *Argemone mexicana* L. and the fish poison *Tephrosia vogellii* Hook. f., as intoxicants have been received, but their employment for the purpose is not yet sufficiently established or widespread to warrant discussion here. Fortunately there is nothing to indicate that the African of this territory is unduly addicted to drugs and the casual observer sees nothing worse than occasional drunkenness. When we recall that in Germany(8) in 1928 it was estimated that six hundred kilograms of opium alone were misused we can afford to judge leniently the small indications of increasing drug addiction in Tanganyika.

References.

Proof spirit (100 per cent proof) contains 49·28 per cent of alcohol by weight or 57·10 per cent by volume at 60°F.

Botanical specimens were identified at the East African Agricultural Research Station.

(1) O. Warburg in "Engler's Pflanzenwelt Ost-Afrikas," part B, p. 11 (1895).
(2) Waddell Lyon's "Medical Jurisprudence for India" (1921), p. 655.
(3) Encyl. Brit. article "Assassin."
(4) From Engler's "Pflanzenwelt," part B, p. 262.
(5) Waddell, *loc cit.*, p. 644.
(6) Translated from letter to the Editor of *Mambo Leo*.
(7) Official Records.
(8) Leschke. "Clinical Toxicology" (1934). English translation.

A Note on the *Ntore* System in Bugufi, Biharamulo District

By J. C. Clarke

WHEN the original Chief of Bugufi arrived in his new country, he saw that it was necessary to appoint a number of trusted persons to act as the guardians of his person and property; to these he divided each a cow from the royal herd and allotted them parcels of land: they were given the name and rank of *Ntore*.

As the military aspect of their position lessened with the gradual peaceful control of country, so the social and tenurial aspect of the *Ntore* assumed importance. An *Ntore* was the chief's man; he ate and drank apart from others. He had the ear of the chief and was in a privileged position. Those who did not live in actual attendance on the chief looked after his cattle.

In the course of time it came about that others wished to become *Ntore*. A man aspiring to this rank would go to the chief with the present of a cow and ask to be given a shamba in the country of a certain headman. The supplicant would perhaps stay several weeks at the chief's court pursuing his request: the period was probably in direct ratio to the value of the gift he had brought. At this time he underwent a probationary period during which he proved himself eligible by his ability to deprive subjects of their cattle and bring them to the chief. He must also have made himself agreeable in the eyes of the other *Ntore*: beer was the key which unlocked the door to their affections. At last the aspirant would be presented to the chief as being now eligible for the rank of *Ntore*; and with the chief's consent would be admitted to the select circle. The chief would require a headman to see that the newly-elected *Ntore* was given a shamba. Subsequently the annual present to the chief of two pots of beer was deemed to render the *Ntore* independent of the headman.

The shamba given to the *Ntore* would usually be one left vacant by the death or emigration of another *Ntore*, for the reason that once a shamba has been accupied by an *Ntore* it never becomes otherwise occupied. The normal land tenure is a system by which the occupier, if an immigrant, asks for and obtains from the headman a *Kiwanja* on which to build his house and to grow his crops; tenure is dependent on good (tribal) behaviour and the sending to the headman of two pots of beer annually. Such tenure is subject to the laws of inheritance and is reasonably secure. If the tenant (for he is not an owner in the complete sense) leaves the area to live elsewhere, then his *Kiwanja* reverts to the headman who, for a consideration, will give it to another person.

The *Ntore* system differs from the normal in the following particulars :—

(a) The annual pot or pots of beer (the equivalent of land rent) are paid to the chief himself.

(b) The *Ntore* is an independent unit in tribal administration, since, in the words of Mr D. K. Daniels' interesting paper on land tenure in Bugufi, "the *Ntore* knows only the chief; he does not know the *Mtwale* (headman)". This is a serious clog in the machinery of native local government since the headman, who is entrusted with the carrying out of administrative orders, has no control or authority over the *Ntore* who form from an hereditary caste. This is further increased by :—

(c) The *Ntore* is usually given a very large *Kiwanja*. Thereby settlers already on the land comprised in his *Kiwanja* become the *Ntore's* "men", with recognized obligations towards the *Ntore*, such as accompanying him on *safari* and taking the *Ntore's* presents of beer to the chief. Incidentally, the headman can approach these people only through the agency of their *Ntore*. However, tax is paid directly through the medium of the headman both by the *Ntore* and his "men."

(d) In some cases an *Ntore* has been given control over a number of other *Ntore* living closely together. In two cases of which the writer knows, this has had unfortunate results. In one case, the head *Ntore* now lives about six miles from those he is supposed to control; as he rarely visits them, they are in a sort of "no-man's-land," since no headman dare claim the country as his. In the other case, the head *Ntore*, who controlled a small area wedged between the countries of two headmen, but generally recognized as being in the country of headman Sinzobakwila, subsequently was appointed headman of the other country, and thereupon claimed as his the country over which previously he, as head *Ntore*, had held control. With the result that, when his people went to cultivate a communal potato shamba in the area under dispute, they took their spears as well as their hoes.

(e) If an Urundi immigrant can prove that he was an *Ntore* in Urundi, he will be made an *Ntore* in Bugufi. This is interesting in showing the close relations existing between Bugufi and Urundi.

It is to be noted that since the writing of Mr Daniels' report in 1933, the position of the *Ntore* has undergone much change. No longer is it true to say that he "does not know the *Mtwale*." The *Ntore* now, in most cases, obeys the orders of the headman. This is true of the Bugufi chiefdom, but not in the neighbouring Busubi chiefdom. The reason for this may be that in Bugufi for the last four years the coffee campaign with its small army of instructors, has not differentiated betwene *Ntore* and others : all have been made subject to the same coffee cultivation rules and liable to be punished in the native court for failure to follow them. Whereas, in Busubi, there has been no influx of instructors with their improper regard for the exclusive status of an Ntore.

In conclusion, I think it can safely be argued that the *Ntore* system is a thoroughly bad one, and which has outlived its original necessary functions. In the first place, it begins with sycophancy at court and an encouragement to the chief to find easy wealth and complete satiation of his thirst in the indiscriminate distribution of *Ntore* shambas. With an increasingly dense population in Bugufi chiefdom, it is apparent that no longer can such shambas be given without upsetting existing tenures. During this year I have found two cases in which, but for my intervention, tenants of long standing would have been evicted in order to make way for *Ntore* whose only claim was that they had given a present to the chief. Secondly, although, as has been shown, the independence of the *Ntore* is breaking down in favour of direct control by the headman, the process is not complete; and in the Busubi chiefdom it has not even really begun. The headmen, however, are now fully alive to the clog on their authority which is inherent in the continued existence of independent *Ntore*, and I have been amused when a headman prefaces his complaint against a certain individual by saying: "He is an *Ntore*."

Letter-writing in Ulanga

By G. M. Culwick

IN AFRICA to-day hundreds and thousands of men and women travel far from their own homes and friends and have discovered the uses of the written word and the post office, but since the majority of them are illiterate they must needs seek out one qualified to perform for them the service of letter-writing or reading. Among some of the more primitive people of Ulanga it happens from time to time that someone, twenty cents in hand, approaches the District Officer with a request that he will write a letter! Enquiries as to why, when there are numerous literate natives available, the would-be correspondent does not seek their aid, have brought to light the following somewhat novel conception of a letter.

To the really unsophisticated African of this part of the world a letter is no mere piece of paper covered with signs, and there is far more in reading it than the prosaic interpretation of those signs. A letter is a supernatural agent whereby the writer transmits his thoughts to the reader, and reading it partakes of the nature of divination, more particularly of that form of divination which consists in holding a string of beads in the hand and waiting for the thought it inspires in the mind. Impregnated with some unknown *dawa*, a letter is fraught with the power of conjuring up the writer's image to the reader and the latter, intently studying the features of the former, becomes aware of the thoughts he wishes to convey. The oracle speaks!

Obviously then, it is desirable to secure the help of as potent a personality as possible, someone whose image is likely to impress the reader with the importance and urgency of the message, someone the sight of whom will galvanize the recipient of the letter into immediate activity. If the *Bwana Shauri* is at hand and an auspicious opportunity to approach him presents itself—well, what more could a man want? No means of transmission could possibly be more effective than to convey the message through him, so that it reaches its destination invested with the authority of the magisterial countenance.

BOOKS REVIEWED

"Zur Vogelwelt des Matengo-Hochlandes nahe dem Nordende des Njassasees," by Wilhelm Maise. Mitt. Zool. Mus. Berlin, Bd. 22, pp. 86-160, four plates, 1937.

This paper deals with collections of birds recently made for the Dresden Museum in the Matengo Highlands, a little known part of Tanganyika lying between Songea and Lake Nyasa. The method of presentation is admirable and can be taken as a model by anyone preparing a paper dealing with the birds of any particular district. The communities and associations are sketched, the faunistic relations of the area are discussed and the breeding-reasons are elucidated with an attention that is rare in African papers and is correspondingly welcome. Full details are given of moults, gonad state, weight and measurements of the specimens. The identifications are clearly the result of meticulous comparison.—R.E.M.

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"Notes on the Ornithology of Tropical East Africa," by Herbert Friedmann and Arthur Loveridge. Bull. Mus. Comp. Zool. Harvard, vol. 81, No. 1, pp. 1-413, April 1937.

This very long paper deals with the numerous small collections of birds, totalling about four thousand, brought together by Loveridge between 1915 and 1923 in such widely separated areas of East Africa as Ruanda and Mozambique. A few field notes are provided by the collector, but the chief value of the paper lies in its contribution to the faunal geography of Central and North-western Tanganyika, a great area that has made very little appearance in ornithological literature for at least forty years.

On the other hand the extensive taxonomic discussion, for which the senior author admits responsibility, proves on the most cursory examination to be thoroughly unreliable, because he has neglected to make proper use of existing publications, even those of such authority as van Someren's in *Nov. Zool.*, 1932, and Sclater's in *ibis*, 1932 and 1933. It is all the more regrettable that the standard should be so low in a work of such imposing dimensions. The fact is that any student of the birds of East Africa who has not a good library at his elbow to serve as a corrective—and that applies to most of us who live here—would do better to neglect the taxonomic discussion in the paper altogether.—R.E.M.

PUBLICATIONS.

The Editor begs to acknowledge the receipt of the following publications:—

"Bantu Studies."

United Empire (Journal of the Royal Empire Society).

Annales du Musée du Congo Belge.

Deutsche Kolonial-Zeitung (Journal of the Deutsche Kolonial Bibliothek, Berlin).

Bulletin of the World Economic Archives of Hamburg.

Journal de la Société des Africanistes (Journal of the Société des Africanistes, Paris).

"Man."

Yale University Publications in Anthropology (Department of Anthropology, Yale University).

Sudan Notes and Records.

Annual Report of the Stoneham Museum, Kitale, Kenya Colony.

CORRESPONDENCE

To The Editor, "Tanganyika Notes and Records."

Dear Sir,—I was much interested in the paper "Iron Smelting in Fipa" by Mr R. C. H. Greig. I have collected a considerable amount of information regarding fuel consumption, etc., as it has been suggested that much deforestation has been caused permanently by primitive methods of metallurgy.

I should be glad to receive any information regarding primitive methods of obtaining copper from ores. As a general rule the quantity of fuel used has been estimated at not less than the weight of the ore treated by the reduction process. I have not had time yet to work out the figures for iron in detail and should be very grateful for any detailed information regarding copper if published in your journal.

The furnace illustrated by Mr Greig appears to be similar to that described by Mungo Parke and described by other writers as Indian, as distinct from the basin or bee-hive type.—Yours faithfully, Arthur E. Robinson.