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NGAMILAND

Captain A. G. Stigand

Map following p. 476.

Note: The spelling of names in this paper is especially difficult, since Sechswana may now, owing to the efforts of the missionaries, be considered a written language, but the system on which it is written does not agree with that of the P.C.G.N. (R.G.S. II. system). The principal differences are these: The consonant written \( f \) in Sechswana is usually the \( \\varepsilon \) of R.G.S. II. (Taung = Taouge). The consonant written \( n \) in Sechswana is more like the \( ng \) of "singing" than the \( ny \) or \( n' \) which is the normal equivalent of the Spanish \( n \). The consonant written \( c \) in Sechswana is our \( q \) (Chwarenangwa). In addition to these difficulties there are the four clicks in the Bushman and one (the first) in the Makuba language, for which on the map Captain Stigand has used four superscript numerals. The only one which appears in the text is the first, the linguo-dental, written \( x \) conventionally (Xwashwe = Godiwe). Now since the Sechswana spelling is well established, and is used officially in correspondence between the Government and the chiefs, as well as in official reports, it does not seem possible for geographers to supersede it by the P.C.G.N. system; yet as it stands it is misleading, and moreover no system either of consonants or numerals can teach us how to pronounce Bushman clicks. We have therefore, provisionally, used the conventional system in the text, and the P.C.G.N. system (with the addition of numerals for clicks) upon the map, leaving a solution of the problem for the P.C.G.N.—Ed. G.T.

This paper has been written as an adjunct to the writer's sketchmap—the result of numerous journeys by land and water in Ngamiland during the last thirteen years—rather than the map being supplementary to the paper.

Ngamiland * is little known owing to its situation, which is remote from the routes of communication between South and South Central Africa, and owing to the fact that it lies within the Batavans Native Reserve, one of the large native reserves of the Bechuanaland Protectorate, wherein the only Europeans are five belonging to the Administration and eight licensed traders with their assistants. Mauth, the chief village or "town" of the Batavans tribe—numbering some five hundred huts—

* Ngami is the conventional spelling. It is from the Sekana name, phonetically = Ng'nam (the \( \hat{\imath} \) is a linguo-dental click), given by the Makuba to the lake, meaning a very large expanse of open water.
is the seat of the local administration and of six traders' stores. The climate is malarial for six months in the year, but much less so than was the case at Tsau up till 1912, when the Chief Mathiba and his people, as well as the local administration and traders moved from Tsau to Maful.

Maful is pronounced as a dissyllable: Ma-ung.

Some notes on Ngamiland by the writer appeared in the April 1922 number of the Journal, wherein a brief rough general description was given of the physical features of the country. But for a better and fuller description I must refer to the following: Dr. S. Passarge's book 'Die Kalahari'; Kew Gardens Bulletin No. 3 of 1909, XIV.; 'The Flora of Ngamiland,' Introduction by Major E. J. Lugard, D.S.O.; or to Hauptmann Streitwolf's book 'Der Caprivizipfel' in Sussexton's Kolonialbibliothek, Band 21, pages 22 to 32, published in 1922.

From the latter, however, I will here quote and translate some relevant extracts since they give an excellent description of the Okovango river system.

Ngamiland belongs to the Middle Kalahari. Its rainfall is from 300-500 mm. Rain can only be depended upon from December til March.

"The only river in Ngamiland which carries water is the Okovango, which is quite a mighty stream. It comes from high up out of Angola, bringing its beautiful crystal-clear water, and for 370 km. forms the boundary between German South-West Africa and Portuguese Angola. At Libebe (present Lisha's village, on Tshikoe island, Andara) it breaks over countless rapids which end in the 4 metre high Popa falls. After that it spreads out into many arms which further on split up again into numerous branches, and loses its water in vast swamps. One arm, the Tauche (Taoge) flows southwards to Tsau and formerly discharged its water into lake Ngami. Ngami was just filled with water in 1935. Since then the Okovango flood water has been ever retreating, and to-day (1960) it dries up in the sand close below Tsau."

Another arm, after the Okovango's entry into its swamp region (Okovango basin), runs with further ramifications to the eastward, then southward, part of it flowing into the Botetle under the name of Tamalakan, and part of it in a north-easterly direction into the Mababe flat under the name of Mababe river. [The latter has not flowed since 1910.]

"The Tamalakan flows into the Botetle, and at this junction also it divides and flows in two opposite directions. The bulk of the water goes to the Makarikari Salt Pan, and a smaller portion flows west to lake Ngami, which it can just manage to reach at high flood. Whereas formerly lake Ngami was filled from the north by the Taoge arm and then ran off to the east into the Botetle, now the Okovango water reaches Ngami from the east. [See map 40 regarding amount of flood water that reached the eastern end of the "Lake" in August 1910, and again the minute amount that just reached the mouth of the "Lake" in 1921, which latter year had a bigger flood than any since 1918; 1922 has been the worst of any.]

"The crying up of lake Ngami is in the first place attributable to the fact that the water of the Taoge no longer reaches it. This is certainly due on the one hand to the diminution in the volume of the water of the Okovango, and on the other to the siltling up of the bed itself. The famous Kalahari explorer Passarge
NGAMILAND

says that one of the causes is that natives are in the habit of abandoning their papyrus 'rafts,' after they have carried their produce down river on them, and these block up the channel mouths." [There is a good deal in this last as a contributing cause. The writer has seen floats of papyrus rafts—which are little floating islands some 15 to 17 feet diameter by some 55 feet deep—in thick- ness, constructed and used by Malukula and River Mawara (River Bushmen) north of lat. 19° on the Okavango main stream—blocking the entrance of many smaller channels in the papyrus beds bordering the Okavango.]

"After the Tange was cut off from Lake Ngami it spread out, particularly to the eastward, and filled a huge swamp area, and at the same time formed a new Ngami north of the old one. Formerly this swamp was not nearly so full of water; of this old Teebuana have repeatedly assured me. Of course this does not conflict with the certain fact of the increasing diminution of the water brought down by the Okavango.

"The Swamp region, which Passage calls the Okavango Basin, is of enormous extent, quite 150 km. by 40-60 km. wide." [At lat. 19° 45' about it is approximately 155 km. wide, and nearly four times Hauptmann Streitwolf's figure.] "It is practically unexplored, and its mapping would be a work deserving of gratitude. The courses of the Taonge and of the other areas, such as the Iora, Kuruman (Kudzamane, or Kuremane), etc., are still unknown."

His following account of one of the short local excursions he made into the swamps close to Tsau, whilst he was the guest of my predecessor there, gives a more graphic description of the scenery than I can write:

\[\text{\textbf{NGAMILAND}}\]

\[\text{\textbf{403}}\]

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(End of July is about the time it usually reaches lat. 20° in the Tonga and Tsatalakane rivers. Besides the time taken by the floodwater in making its way to Ambaara (Libebe), further down, after the Okavango has spread out into its delta at about 18° 50' S. lat., the floodwater has naturally to saturate and fill up many dry channels and much dry swamp area before it can make its way further south.)

"The Ngami Land depression must in those former days have been an enormous inland lake. From what cause such a great change has occurred in the landscape I must leave undecided. Chiefly it is the result of diminished rainfall. If one accepts the theory that after the Zambezi before it broke through at the Victoria Falls discharged its water into this Kalahari Basin, then one can easily understand that enormous river lakes existed at Ngami and further on towards the Makarikari Pan. When subsequently the Zambezi diverted off the water from this region to the sea, a general change of climate quickly resulted."

For the following information as to the hydrography and history of Ngami Land during the nineteenth century and the latter half of the eighteenth, I am indebted to the oldest inhabitant, an ancient Mokoba, Mokwati, descendant and heir of the Mokuba chief Zankote, who was chief of the Bayei living at Lake Ngami when the Bechuanas Batuwana occupied Ngami Land about the year 1805. Old Mokwati, with whom I have had many talks since I first came to Ngami Land in January 1910, has a very clear memory. He must be well over a hundred years of age, for he says when the Chief Khama was born (Khama to-day is said to be close on a hundred years old) he, Mokwati, was a little boy "so high" (indicating about four or five years of age). Mokwati clearly remembers the arrival of the "Naka" (Doctor Livingstone). He says that he was a young man at the time. I think that Mokwati must have then been about thirty years of age. Amongst other recollections of the "Naka," he says that Livingston brought with him a large grown lion cub as a pet which was led on a chain, and that this young lion used to lick Livingstone's hand, but growl at any other person who came near it. There was also a small baby elephant.

From old Mokwati's information there seems to be very little doubt that "Lake Ngami," after the draining off of the vast Okavango Basin lake by the Zambezi following its breaking through at the Victoria Falls (in the sixteenth or seventeenth century (?)), has never been at any time since anything more than a shallow flooded depression or large open patch of swamp water. Anderson, in his book 'Lake Ngami,' published in 1858, dwells upon its shallowness and on his disappointment when he saw it on 28 July 1853.

Old Mokwati, who, as stated, was a young man about thirty years old when Dower and Livingstone discovered Ngami, and dwelt on the shore of the lake with his father and Mokuba, and was with them constantly fishing and hunting hippo on the lake, has told me that the
depth of the lake in the middle and deepest part was “equal to two ‘mokoro’ (canoe) poles lashed together and that you could just touch bottom with these.” I have measured a large number of Mokola canoe punt poles and 12 feet 6 inches is the very longest I have found among them; 11 feet is the average. Taking two 12-foot poles lashed together and deducting 25 feet from each for the joint gives us 10 feet. This was before Livingston came.

Further, Mokwati—who must have been born somewhere about the year 1820, or perhaps even a year or two earlier—has often declared to me that when he was a boy he often heard the very old men of his family relating how, when they were boys, there was no lake, but that the Mokolane river (Taoge) ran through a plain wooded with Mowchwe (Combretum procumbens), camelthorn, and other trees, and that they used to play along its banks. That later this river overflowed its banks and flooded this Ngami wooded plain. Mokwati further says that when the lake started to dry up and the water receded, the receding water disclosed old stumps of Mowchwe, Mogoloto (camelthorn), and Matshira trees on the lake floor, “thus proving the truth of what our fathers had told us.”

This is corroborated by Anderson, who visited the lake in 1853; see his book referred to above, p. 441, where he says of the lake, “Again, there are unmistakable proofs of its having been at one time of smaller dimensions than at present, for submerged stumps are constantly met with.”

Therefore, at a very rough calculation of the ages of the old men of Mokwati’s boyhood, whom he mentions, the Mokolane river which ran through the Ngami wooded plain must have overflowed its banks and flooded the Ngami depression some ninety years before Livingston’s time, perhaps somewhere about 1760, which would be just about forty years before the advent and occupation of Ngamiland by the Batawana.

The forecast by Livingston and Chapman to the effect that “The change of climate is rapidly reducing the water which flows into the lake, and in all probability the country round will, within a few generations, assume the character of the Kalahari desert” has proved very true.

As regards the appearance of the lake during my absence in Europe during the War, I passed along the north margin of the eastern end of the lake in 1915, when dried-up reed beds were still there. These are burnt yearly by the local natives with a view to reclaiming land for ploughing. The old swamp beds are valued owing to the fertilizing qualities of the ash from the burnt reed roots. After the rains most of the reed roots shoot afeast, being extraordinarily hardy and tenacious of life, to be burnt again after they have grown and dried up in the dry season. The matted mossy growth of the reed roots reaches 3 to 15 feet below the swamp bottom, and this stuff goes on smouldering continuously for many months every year;
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it in 1921: Prior to my the War, I last passed the lake in 1913, when burnt yearly by the local grazing. The old swamp of the ash from the burnt roots shot afresh, being 30 burnt again after they the matted mossy growth swamp bottom, and this any months every year;

in fact, ordinary rains sometimes fail to put it out below the surface. Eventually, after drought years, the roots are entirely destroyed by fire, the ash is blown about by wind, and under the action of wind and rain on the sand and dust blown on by the former, hard soil is formed covered with a short quick-grass. I next viewed the lake flat in April 1922, and for as far as one could see with glasses from the eastern end, the whole lake bed had been transformed into a level and smooth golf-course-like flat covered with short quick-grass. Its appearance was identical with that of the Mababe flat, this proving that the transformation of an old swamp bed with dead and drying reeds and treacherous bottom of partly burnt-out reed roots into a level flat of hard grass-covered soil can be effected in about five years. The same transformation has been going on at the site of the swamp bed at Tsau since I was last there in 1915. I had always conjectured that it must have taken the Mababe flat at least twenty years to evolve from a dried-up reed swamp to its present state of hard turf flat, but I had greatly overestimated.

The Taoge (the g is the Sothwa g, pronounced as the R.G.S. A6) branch of the Okovango has, from Livingstone's time, been looked upon by Europeans as the main continuation of the Okovango river. This is not the case to-day, neither has it been for some time past. At the present time, and for perhaps at least some eighty years past or more, the Ngoga river (pronounced in R.G.S. system=Ngokha) is and has been its main channel and true continuation (see map) and to-day carries at least three-quarters to four-fifths of the Okovango water to the eastward and then southwards, eventually reaching and supplying the Thamalakane with its perennial flow, thence flowing into the Botlleit.

Mokwati states that when he was a youth the Ngoga river had not such a strong current as it has to-day and did not carry so much water; that he and other Makuba used to fish in it and hunt hippo, where to-day and for some time past no Makuba or other river people will a deep river on account of the aggressiveness of the hippo and the force of the current and depth of the water. But he also has told me that in his youth the Thamalakane was a bigger river than the Taoge. Also that the Thamalakane was then a bigger river than it is to-day. He has twice on different occasions told me this.

In Anderson's time (he reached Ngami on 25 July 1853, and therefore, as he states, the Taoge was at the height of its flood waters) from his data the Taoge does not seem at that time to have been such a deep river as I found the Ngoga to be last year in July and August. He says "the lake is fed by the Taoge. This river never perhaps exceeds 40 yards in width. The main course of the Taoge is north-west, but it is so serpentine that in thirteen days when I ascended it, travelling on an average 5 miles per day, and reckoning 2 miles to the hour, I made about one degree of latitude due north of the lake. As far as I pro-
NGAMILAND

ceed however it was navigable with smaller craft, for only in three places that I can remember did I find less than 3 feet of water, and generally speaking the depth was considerable. It must be recollected however that it was at its greatest height.

The Tauge therefore, even in those days when the Okovango must have carried down a greater volume of water than it does now, seems to have been a smaller stream than the Ngoga is to-day. (See data on attached map as regards width, depth, and current as I found it in July and August last year—at the height of the flood water. 1921 was a bigger flood year than any previous year since 1910 (but not equal to 1920)—barring 1928 I am told, when I was absent.) At no place did I find the Ngoga less than 10 feet deep; in some places 17 feet and even 21 feet; average was 12 feet; current (surface velocity) 17 miles per hour. Against the current with a 255-feet aluminium boat with eight Makuba paddlers, on an average, only 11 to 14 miles per hour could be made. This was timed by stop-watch timing a boat-length passing a selected papyrus stem, etc., when navigating close to the papyrus beds blocking the channel. The two dug-out canoes I had with me could make a little more against stream, say up to 15 miles per hour, but could be outpaced by the boat when returning with the current, the boat then easily doing 4 miles per hour and a little over.

Anderson says "he reckoned" he made 24 miles per hour against the current of the Tauge, which "he thought" showed 3 to 5 miles an hour. I think that he must have much overestimated; I know how deceptive one's speed is in a boat or canoe. What appears to be 3 miles per hour, when tested by timing boat-lengths passing a fixed object in the water (a papyrus stem or water-lily, etc.), is found to be only about half that speed. The same with current velocity. Most of the Ngoga traversed last year I should, at sight, have put down as having 4 miles per hour current, whereas upon testing it with floats between marks with a stop-watch I made it a little less than half that, on an average 1½ miles per hour.

Mampukushu natives living north of lat. 19° told me that their old men have told them that the Ngoga river was only formed during the early part of the chiefship of Letholothbei (the Batavana chief visited by Livingstone, and who must have succeeded to the chiefship, some considerable time before Livingstone's arrival, since he was a boy when he was made chief), and that the Tauge used to be the main Okovango channel, the Ngoga being merely a "molapo" or shallow swamp channel, or collection of channels. They say that the Ngoga was formed by hippo in great numbers breaking through and trampling a big hippo path through the papyrus beds eastwards, that most of the big "madiba" or pools were originally formed by crowds of hippo

This is quite possible. In many places in the deep papyrus-choked swamps I have found hippo paths, or submerged hippo alleys, which the concentrating flow of flood water has enlarged into fairly respectable channels through which a canoe can conveniently pass.

The said Mampukushu also agrees that the changing of the Okovango's main course from the Tauge to the Ngoga is further due to the choking up of the mouths of the effluent channels in question by the silting up, combined with the growth of papyrus, by being further aided by the flow of abandoned papyrus rafts.

As regards the Thamalakane—its correct Sechswana spelling, not Tama-

lakane (the TS is not pronounced as in English, but is sound followed by a jisipate)—which Livingstone calls the "Tumakale", was evidently once smaller than to-day. There are some submerged stumps of Much- were trees still visible in its bed 6 miles below Mauf. As I have said above, the Thamalakane appears to have been in Moswati's youth bigger than it is to-day. With regard to the evidence of the submerged stumps in it, it was probably a very much smaller stream, or totally non-existent, prior to about 1760, and its valley may have been flooded at the same time that the Mokolane river overflowed its banks on the Ngami plain.

My journey in July-August 1921 was up the Gonoti and Mogoyebo

rivers, to Xgdikwe "lediba," or lagoon, thence eastwards down what becomes the Rudumane, towards Mababe, thence back via Xgdikwe, up the Moanachira river into the Ngoga river, up this to Xesibe island, then returning down the Ngoga to the beginning of the Moanachira, then across the swamps, striking the lower course of the Ngoga, where it is called the Boroga, touching at Kuni on the long island, thence down the Sentantadibe river to the Thamalakane. It was most interesting, since besides the Ngoga river, I found large and deep "madibas," such as Xgdikwe (the X representing here the lingua-dental click in these River Bushman names), Xkaxamikwe, Xgobega, doke, etc., the existence of which I had never previously heard of from natives, as well as ascertaining the great length of the island named Chuoba at its north-western extremity and Xgubadum at its south-east end. Navigable channels for boat and canoe were found throughout, except at a spot near the Shipidi lagoon and between there and the Moanachira lagoon, where the Moanachira river loses itself in dense papyrus through which it filters, to reunite into a decent channel further on. Here, after a whole morning's reconnaissence a channel had to be cut and smashed through the papyrus bed for some 400 yards, the rate of progress being feet per hour, enlivened from time to time by striking a little pool of some 10 yards diameter which would give a false hope of a proper channel again.

The Xgdikwe lagoon is the largest of all the Ngamiland "madibas." It is supplied by the Moanachira river, which also supplies the neighbour-
NGAMILAND

channels, or systems of channels, which become the Kutsakane and Mogogo rivers to the east-north-east and south-south-east respectively. The Ngoga—the Okovango main channel—of which the Moaancha is an effluent, assumes the name of Boroga near Kuul. Further on its is slender, or an effluent, was a narrow, rush-grown mound or small bank, where the first night's rest was permitted. The second night we actually had to "sleep on the water." In the boat held alongside the papyrus bed, as that dismal procler Moseoakhamo (the sort of foreman and courier supplied to me by the chief Matlaha) had been gloomily predicting since we left Ngoga island. It is the first time in all my swamp journeys in Ngamliland that a comfortable island for a night camp was not reached by sunset every day. One had been rather spoiled that way.

The return journey with the current was good. Leaving Xesabe island at 7:30 a.m. we arrived, hippo permitting, at Ngoga island shortly before 4 p.m. that afternoon. It was after leaving Ngoga island next day that the canoe was sunk and then the boat damaged. A hippo-proof boat or a papyrus raft (which is invulnerable) is a necessity for this river.

The Batawana call a perennially flowing river a "noka," and the spillways or shallow flood channels that only flow when the flood water fills them "molapo" (singular—molapo). But in Sechvana the word "noka" is strictly applicable to any river or channel-bed, deep or shallow, that actually has water flowing in it, and "molapo" to any dry river-bed or channel. The Batawana, not being a river people, have not the clear-cut differentiation of the Mampuku, who dwell on the Okovango in the north of Ngamliland, with whom a spillway or shallow flood channel is always "Moronga" and a river with a deep bed "Ruatu." Also the Makaba always call a spillway or shallow flood channel a "Zilum," and a river with a deep bed a "Munanga" (the reverse to the Mampuku). The name Okovango, or Kovango, is not used by any natives of Ngamliland. The German Missionary Oblate Fathers at Andara, who know the Mampuku language well, tell me that they do not know whence the name Okovango originated. The Portuguese are probably responsible for it (Cubango on their maps), and it may have been gathered by them from some tribe in Angola living on this river above its confluence with the Kwilo. The Masekeri (Nganana's village) at that confluence do not use the name.

The Mampuku merely refer to it as the "Ruatu." All other natives of Ngamliland likewise refer to it as the "river" in their own language. No river in Ngamliland has a continuous name of its own. It is merely the "river" of such and such a place. The whole country, swamps included, is divided up into "wells" or districts, some large, some small. The rivers are referred to accordingly, as if, for instance, the Thames were successively alluded to as the "river of Windsor," the "river of Putney," the "river of Westminster," etc. Native information about rivers, therefore, can be very misleading when a native tells you...
a Ngamiland native if the Thamalakane runs past Maun, he will—unless he is an intelligent Motswana, who are superior in intelligence to the subject tribes, and will generally understand what you mean—deny it and tell you that “the Thamalakane is far from Maun. At Maun there is the Maun river.” It will be seen from the map that the same principle holds good also with large islands, these too being divided up into “velds.” It is only a small island that is favoured with one name all to itself. This is, of course, equivalent with the essentially parochial existence of the inhabitants of Ngamiland. The fishing, needless to say, parochial, no Mokola or River Mosawa (River Bushman) is allowed by his neighbours to go outside his own district. Therefore, as guides and spotters on hunting trips they are useless outside their little radius, as a rule. In the swamps you have to call upon the Motswana “chief’s man” who acts as guide, to hunt out generally reluctant fresh pilots every 10 to 15 miles. For the Ngoga no pilots are obtainable.

The Sandbelt region, that is, the country above the level of the Okovango basin, high-water level, from the latitude of the “lake” northwards, is covered with scrub forest. To the west of the swamp region, roughly south of about lat. 18° 50’, it is almost entirely Mogolo (Terminalia sericea) scrub forest. North of that it is chiefly Moseshe tree (generally called “wild serings”) (Altissia antelminnitica (?)) the immediate neighbourhood of the old “lake” margin and banks of the Ngake river is mostly Mogolo (Camelthorn (Acacia giraffa)) forest, which is usually only found within and bordering old flood areas. Between Tsau and the Kanyero melapo and there and the Thamalakane most of the scrub forest is Mokola (Acacia horrida), with Mogolo and some melapo, and other thorny acacias. From lat. 20° from the east as far west as roughly long. 22° 45’ E. Mopane scrub forest practically entirely predominates up to the Chobe on the sandbelt and on the large islands in the swamps.

The margins of the swamps, the margins of the large islands, and the whole of all small islands are wooded with tropical trees, the largest and most stately of which is the Mokuchot, for which no botanical name is given in Passarge’s list. He states that it does not extend east out of the Thamalakane, and that it dies in the drained-up flood areas. With regard to the latter, when I revisited Tsau in February 1912 after an absence of over five years, I found a startling change had taken place in the scenery. The swamps at Tsau, which up till 1915 had been perennially under water, had dried up and large tracts had already undergone the same transformation that has taken place on the floor of Ngami, described above. The numerous “natives” of the Mokuchot trees had withered and died, as had the formerly luxuriant Phoenic palms and dense vegetation of Tsau and its neighbourhood presented a bare and dismal-looking landscape. The only redeeming feature is that with the drying up of the water malaria has locally almost disappeared during the rainy months.

Other chief trees of the Swamp region are Mochaba (Ficus Bafshanae), Moporoza (Kigelia finula), Molodoli (Cephasa solanifera) the shade of all trees, Mokola (Acacia Parrotarae), Musa (Akebia Arabica), Mopucoro (Ficus hongenisis), Momba (Baobab, Adansonia digitata), Mokolina (Hyphaena palmis), Tsaro (Phanx reclinata palm). The islands between Tsau and Tubu are chiefly wooded with dense Mokola and Tsaro palm. The tall Hyphaena, or Borassus palm, predominates to the east, north of Maun. North of Tubu (which is not a real island since it used to be flooded at high floods in Chief Seigama’s time) the Acacia arabica is seen, but the Mokuchot became much more common. At Kgorovana and near Motswenele’s three are beautiful clusters and small forests of Mokuchot.

North of Mokogoro on the sandbelt near the river, the Shil, or native teak, is prevalent. From this the Mampukusha carve out their well-cut and finished dug-out canoes. The Missionary Fathers at Andara have made all their furniture out of this wood, which takes a fine polish. The Mampukusha make 5 to 6 feet long paddles from the Moota tree, which is a light wood and buoyant.

Our census of 1921 gave the total native population of the Batuwana Reserve as 17,449 with 103,089 head of cattle. The Captivi Strip has this year (1922) been placed under the Bechuanaland Protectorate for administration. The Mampukusha and their chief Litho living on the Okovango in the western portion of the Strip, number in all some 200. A further 1500 to 2000 Mampukusha live at and near Mahembe and on the Banga side of the river down to Khammane in Batuwana country, under the chief Mathula.

Of the population of the Batuwana Reserve the bulk are Mokuba (who formerly called themselves Bayei). These number some 15,000 or more out of the total 17,449 (which must be taken as approximate only, since with native enumerators supplied by the chief, and the impossibility of catching and numbering most of the wild River Bushmen and many Mokuba fishing, etc., in the Swamps, a fair number must necessarily be left out). The chief also thinks that one must add another 50,000 to the cattle number. The Batuwana, the ruling race, to-day only number some 1500. In-breeding, disease, and degeneration have greatly reduced their numbers. Natives generally in Ngamiland, Batuwana in particular, suffer from 'weak chests. The balance of the population is made up of Dzamara (refugees from German South-West Africa), some Mabate, Maksab (both river tribes from the Chobe), some Barotsi, and a good number of River Bushmen.

The Bayei or Mawe—i.e., to-day called Mabikga in Ngamiland—are of
Ngamiland and his son and successor Moremi I brought the Mkhahalari and the Bushmen into subjection, but with the Bayei they did not interfere. The Batswana lived and hunted on the sandbelt and the Bayei lived and fished on the lake and river. The Mabuka, or Bayei, were as numerous as they are to-day. During the chieftainship of Moremi I, Sebitwane, chief of the Makolo, came from Botswana and sailed the Batwana. Moremi and his people, who at that time lived at Manyamane (some 40 to 5 miles south of Dauasa flats) fled to the Kavimba-reidit (on the Chobe), whereas the Mabuka escaped into the swamps. Sebitwane followed up Moremi I, and found that he had died of disease and that his son Sedumeni was ruling the Batswana. Sebitwane asked the Batswana to join him in subjugating the Bayei and settling at Linyanti. He then killed Sedumeni. Mogalakae, brother of Moremi I, split up the Batswana and took a portion of them to Matshara (Totok), lake Ngami, and built there. The remainder of the Batswana stayed under Ngoro and under Sebitwane. Mogalakae brought with him Letshotebele, Sedumeni's younger brother, who was a small boy. Mogalakae placed Letshotebele in the chief's chair while he was still young. Letshotebele then began to bring the Mabuka into subjection. Zankotse was then already dead, and Mosadi, his son (the present Mogalakae's father), ruled the Mabuka at lake Ngami. Mogalakae wished the Batswana and Mabuka to form one tribe against the incursions of Sebitwane. It was Letshotebele who began to oppress the Mabuka. When Letshotebele was grown up Sikuletse, Sebitwane's son (Sebitwane was dead) raided Matshara (Totok). (Toteh is a contraction of the Sechuana word “letcheh”, the local term for cattle). The Batswana fled with their cattle to Kgwebe, Sikuletse following them. A battle took place at Kgwebe, Letshotebele beating the enemy. Letshotebele possessed many livestock and weapons which he had brought from traders, but Sikuletse had no firearms. The latter with his people died back to Linyanti. The other Batswana still lived at Kavimba. When Sikuletse returned intertribal war started among the Makolo and the Batswana. Sikuletse died of disease. Then the Batswana of the Linyanti trekked and joined Letshotebele.

To cut the further history short, Moremi II succeeded his father Letshotebele as chief of the Batswana. In or about 1883 Lepetegula, having heard from a Makolo captive, escaped from Moremi, of the Batswana cattle wealth, sent one of his Matabele to raid them at Toteh. Most of the Batswana, with such cattle as they could save, escaped on to islands in the swamps north of Tutu, while Moremi and his two general and cousin Dithapo, with some of the Batswana, stayed behind at Toteh, holding the Matabele in check with firearms—the Batswana having some M.I. rifles, muzzle-loading guns, and flintlocks. Some of the Matabele had M.I. rifles but did not know how to shoot, whereas the Batswana were very much better shots. The Matabele...
NGAMILAND

were unable to fight much, but rounded up and took off most of the cattle
which the Batawana had left behind. The same day another Matabele
sent by Lobengula, took place; the Batawana retreated hurriedly with
their cattle on to an island in the swamps and here with rifles resisted
the attack of the Matabele, a very large number of whom were shot swimming
in the water advancing to the island to attack, and crocodiles disposed of
the wounded. The Matabele remnant returned with only sixty or seventy
sheep as they found on the mainland. About this year Moremi II
moved his "town" to Tsiaben, north of Tsaa. This year, or next,
Ngami started to dry up as the Molokane river was beginning to stop
running. It was just after this that the reed lake water disclosed
the old submerged stumps of trees in the lake-bed, dating from before
Tawana's time. It was also at this time (1857) that the Savuti river,
running into the Mababe, began to dry up.

Moremi II died in 1838, leaving his son, the present chief Mathiba,

As carriers they are much inferior to those of East Africa, as they are
lazier and dawdle—unless on the homing trail—and they only carry a
load of 35 to 40 lbs. This is never carried on the head, but is divided
in two portions and slung on to opposite ends of a stout stick which is
held balanced on the shoulder. The only time they hurry is when they
are in the market town of the "chief's men" (a sort of constable,
chief's messenger, gamekeeper, etc.), who have a sense of humour as well
as a stinger in his speech, says "meat makes them run."

But their great redeeming feature is that they are mighty hunters
of game. A Mokuba will with a steady rhythmic swing pole a canoe
practically from sunrise to sunset, and then over a pail of game meat
at the night camp loudly tell and laugh throughout the night, if he is
allowed to.

They are of course only shallow-water men and are much afraid
of deep water, as a rule, where they will carefully hug the bank. The sight
of the 12-feet high Popa falls, to the foot of which I took a Mokuba
crew in 1910, terrified them, and it was with great difficulty that the
Batawana foreman and "couriers" with me restrained them from
deserting. Their intelligence is of a lower standard than that of other
natives in Ngamiland.

The Mampukushu, on the other hand, are deep-water men, and
adapts with the long 9-foot paddle, which they use in a standing position,
attacking their prey as well as ascending them. They have a con-
tempt for Makupa as river men. In his own rapids the Mampukushu
canoemen should more than hold his own with any other human being.

The Mampukushu chiefs succeed through the female line, the chief's
elder sister's son being the heir. This was also Bayei custom till the
Batawana (Bechuanaland) inheritance through the male line was imitated
by them.

The chief of the Mampukushu (present Lisho, who succeeded Liseke
who died in 1915) is the hereditary Great Rain Maker of the Okvango,
and his eldest sister's eldest daughter is the Rain Woman. Mysterious
rites are performed yearly inside the chief's hut—upon which the people
are forbidden to pry—when a secret connection is said to be mixed in the
"rain bowl." Up till the time of Moremi II, the Batawana used to
pay yearly a professional fee in cattle to the Rain Maker, since no
flood can come down the Okvango unless he arranges it.

The Missionary Fathers tell me that the present Lisho has made a
mess of things. Just before the 1917-18 rainy season he told his people
that they need not sow any crops because he was angry with them and
he would make no rain. It rained deluges that rain-year. Another year
there was a drought when he had been "making rain." So this year
he has given out that he is not going to try because he wishes to see whether...
one Barangandu, who has just succeeded as chief to a seceded portion of Mampukushu, who left the late chief Leibee when he became chief, knows how to make rain. This rival, who claims to possess the original and genuine Mampukushu rain-making apparatus, has just trekked from the Luyana river on to an island above Andara.

In dress they wear a kind of kit, dyed black. The women grow their hair long and splice dyed and greased string pigtail continuations to the ends of their locks. They appear to be akin to the Ovambo and their language is somewhat similar to Otjiherero.

As regards the River Bushmen and their classification, two years ago Dr. Périnques, the Director of the South African Museum, Cape Town, informed me that he had just managed to obtain a model of a River Bushman from Ovamboland, and stated that in all likelihood he was a cross between the San and the Herero called Berg Damara (dubbed now Klip Kaffir); and that the Bushmen he had from the borders of Damara and Ovamboland, and roaming thence to Bechuanaland and Ngamiland, have a strong infusion of Bantu blood.

As regards the word "Mokuba," although it subsequently was also used as a word of contempt by the Batawana, like the Anglo-Saxon word "curt," it is not a Bechuanaland word. It has been suggested to me by the ordained native missionary teacher representing the L.M. Society in Ngamiland, Andrew Kzanu, that the Batawana got hold of the Mampukushu word meaning "people." The Mampukushu in their language never refer to themselves as such, but as "Hakua." ("people.") sing = "Mogwa" (person). The Mokuba, however, they refer to as "Hajo." (those people).

The Mampukushu trekked from the Moabi (upper Chobe) to the Okavango under their chief Leliebe 1 at the beginning of the nineteenth century. As stated above, they made Namasseri and its upper course the Kgaduni their southern boundary.

Under Tawana and Leitikathothe the boundaries of the Batawana were Namasseri in the north, Ghanzi in the south, Nya-Nya-Nye (away in the sandbelt to the west of Tsau) in the west, and Mogil (in Khama's Reserve today) to the east.

The Batawana and Mokuba grow "Kaffir"; the former grow the red-grained variety and the latter the white, "jelbelebe" ("bullrush" corn), Indian corn or "mealsie," beans, pumpkins, and some tobacco. The Mampukushu in addition grow large quantities of ground nuts and more tobacco than the Mokuba.

Owing to the often insufficient local rainfall the Batawana and Mokuba plough lands both on the sandbelt above the flood-plain—these are entirely dependent on rain—and also to a greater extent on "bokgola" ground, i.e. molapo and swamp flat ground that is flooded a couple of months in the year. The bokgola ground is ploughed after the flood water has dried up on them. These yield crops, usually, when droughted

NGAMILAND

destroys the "rain land" crops, although if unusually heavy rains occur a local flooding may destroy them.

The Mokuba and River Bushmen, besides eating fish, live also on water-lily roots, chilis (flag) roots, the base of papyrus stems, tortoises, both land and water varieties, water pythons, the fruit of the Mokunon, Motsoadi, Moabota, Mokolone, and Tsaro palms, etc.; they hunt lechwe in the swamp, getting up drives and killing them with the spear; also they hunt hippo when they possess muzzle-loading guns and ammunition. The present-day Mokuba has not the pluck to hunt hippo as his fathers did, with the harpoon.

As to fishing, besides nets (which they make from string from a fibre aloe and also a variety of sannawieria), fish-traps both fixed and portable, spear-fishing, they poison fish in small shallow pools by throwing in the dried and ground bark of the Mtea tree.

The large game is elephant, giraffe, rhinoceros, Cape buffalo, sable and roan antelope, kudu, blue wildebeest, tsesesie, pala, zebra, redbuck, bushbuck, waterbuck, lechwe (in great numbers; the black lechwe not found), sitrunga, sternbok, and duiker. Eland and gembok live on the sandbelt, where also Cape hartebeest and springbok south of Tsau are found; in the Swamp area hippo and crocodiles. Carnivores are lion, leopard, cheetah, spotted hyena, hunting dog. Brown hyena are found in Ghanzi district. Most of the game is to-day within the fly belt, including the large islands.

When hunting in the Swamp region in August 1911 I came across a lion who had developed aquatic habits. This enterprising gentleman had taken up his hunting quarters for the lechwe hunting-season for two months on some islets in pretty deep swamps a couple of miles off the mainland at Chamchambo on the 66-mile-long island. At night he swam from islet to islet through 7 or 8 feet deep water, stalking lechwe on one islet after another in turn, roaring at intervals each time on a different island. Although leopards thus hunting lechwe in the swamps are common, I had never heard of a lion being so adaptable.

Fish include many varieties of the Cichlidae family, species of Tilapia and Paratilapia. Of these a collection was made for the British Museum, Natural History, by the late R. B. Woosnam in 1909; also the splendid Tiger fish (Hypostomus Incurvis), which gives good sport trotting and casting with rod and spoon-bait in the deep lagoons and rivers.

The Batawana seldom hunt in the fly belt since the Motawana likes to hunt on horseback, and a well-to-do Metawana immensely dislikes walking. But a few individual poor Batawana, who earn their livelihood as "chief's men," and have a large area of the swamps allotted to some of them, are frequently good hunters and spoorers, and indefatigable walkers.

Of the districts, the Kabamane district is the most thickly inhabited with a large number of little Mampukushu and Mokuba villages.
MAGNETIC VARIATION

This district begins at the south-west end of the Makwengana spillway between the Chobe and the Okovango, which has not been flooded since 1910. It must be about dead level, since when it does flood, the Chobe and Okovango flood waters respectively meet halfway. The only Europeans who have traversed it, to my knowledge, are Major St. Hill Gibbons in 1898, when on his way from the Chobe he turned back halfway, meeting there the rising flood water from the Okovango; Franz Seiner in September 1905; and a colleague of mine, Capt. C. B. Moseley, who traversed it on foot with carriers in November 1913, from Diel, on the Chobe, to Kabamokonti and back.

No native in Ngamiland appears to be quite immune from malaria. The Batawana, although less affected than the European, suffer more from it than the Makuba. But even the Makuba during the fever season frequently get malarial headaches and a rise of temperature.

If, however, the process of desertication of this country continues in the ever steadily progressing manner that it has done during the last hundred years, then at no very distant time it will be as free from malaria as the Kalahari is to-day, but then it will also be a thristland.

THE MAGNETIC VARIATION IN THE NEIGHBOURHOOD OF THE NORTH POLE

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Chart following p. 476.

1. THE observations of magnetic variation obtained by the Canadian Arctik Expedition and published in the Geographical Journal, p. 301, Oct. 1922, indicated, as was pointed out in the note added by the Editor, that the curves of equal magnetic variation given on the small North Polar Chart of the Magnetic Variation Chart, 1922, published by the Admiralty, require correction in the region concerned.

As these observations were made in the region between the geographical and magnetic north poles, in which the variation changes very rapidly from point to point and in which very few earlier observations were available, they have been utilized to revise the curves of equal variation in the polar region. Opportunity has been taken in making this revision to incorporate other observations published since the compilation of the 1922 charts, in particular those obtained by Amundsen's Maud Expedition, 1918-1921 (Terrestrial Magnetism, 37, 35, 1922) and some obtained by the observers of the Carnegie Institution of Washington ('Land Magnetic Observations,' 1914-1920; Vol. IV., 'Researches of the Department of Terrestrial Magnetism,' 1922).

Although of recent years there have been frequent expeditions to north polar regions, there has been in several instances a considerable
SOUTH AFRICA

Map of
NGAMILAND AND GHANZI.
From Compass Traverses by
CAPT A. G. STIGAND.
1910 - 22.
Scale 1/1,500,000 or 1 Inch = 23.7 Stat.Miles.

Reference
- River with perennial flow of water, courses observed
- River courses not observed
- "Malapra" (spillways or shallow flood channels) only flowing during normal flood seasons.
- Old beds of rivers and "Malapra," dry.
- Areas perennially flooded.
- Areas flooded in normal flood season, e.g., 1921.
- Areas previously flooded, but not since 1928.
- Margin of flood areas, defined by rising ground.
- Native names of districts or "veldts.

Map printed by the Royal Geographical Society.

NGAMILAND.
Stigand.
NOTE.

This map is a re-drawing of Capt. G. G. Sturgeon's official survey of the numerous irregular country names made between Feb., 1908, and April, 1909, adopted by him in the geographical description of the various sections of this map to be used in parts to supplement the title. The original map of the S. S. S. is on the scale of 1:50,000, and with the detailed information which it has not been possible to show in the re-drawing.

The names are given as far as possible in accordance with the S. S. S. 11. system, but the spelling of some names in this part of Africa has not yet been decided. The main figures on the map are: A. Surface; B. Roads; C. Tributaries and Interfluves; D. Settlements; E. Irrigation; F. Irrigation channels; G. Road or rail sections; H. Irrigation areas; J. Irrigation works. The map is taken from the Royal Geographical Society's Atlas of Africa.