

ago Mirambo, who was not as strong as he is now, had been making a raid to the east of Uyui and wished to return home by that place, but not knowing how the chief of Uyui was disposed towards him, he sent men to him with a hundred hoes and a hundred bullets, with the following message, "If you wish peace take the hoes and till your fields with them; if you wish war take the bullets, for you will need them all." The chief preferred the hoes, and was ever after known as Majembe Gana. He has since lived on good terms with Mirambo. There is a dense population about Uyui, and large quantities of rice, maize, and mtama are grown in the district. The Church Missionary Society has now a station there.

The country between Uyui and Tabora is almost entirely jungle, and abounds with large game; there are also many lions which commit great havoc at times among the cattle and goats.

I remained five days in Tabora, living in the house of Sheik bin Nasibu and brother of Abdullah bin Nasibu, called by the Wanyamwezi Kisesa on account of his valour; both of these men will be familiar to readers of Mr. Stanley's books.

I returned to Uyui on February 16th, and remained there five days more, being during that time the guest of Said bin Salem, the former governor of Unyanyembe, and the old friend of Burton, Speke, and Grant, as well as of Majembe Gana.

I set off from Uyui on my return journey to Kagéi on February 21st, and arrived there on March 15th. I took the same route as on my journey down, as it was the shortest and I was pressed for time. An immense quantity of rain had fallen during my stay at Uyui, and much of the country was flooded. We were delayed two days by the Monungu River, and when we did cross it the water on the northern bank was up to our necks. I think there is no doubt that this enormous amount of rain produced the extraordinary rise of two feet in the Victoria Nyanza at a time when it is nearly at its lowest in ordinary years, and contributed materially to the unusually high Nile which occurred later on in that same year.

Shorawak Valley and the Toba Plateau, Afghanistan.

By Major W. M. CAMPBELL, R.E.

Shorawak Valley.—The Shorawak Valley was only known to Europeans by hearsay until visited during the recent campaign. Having been fortunate enough to make one of a party which visited the northern end, I offer a few brief notes of that district, which I believe to be very similar to the rest of the valley.

The valley is a narrow strip of very flat level country, lying between the desert on the west and north-west, and a range of hills, generally

known as the Sarlat Hills, on the east. Its general direction is about north by east, and south by west; the width at the northern end is about 10 miles, only six of which however are arable, the rest being a stony slope up to the foot of the Sarlat Hills. The total length is probably about 40 miles. The elevation of the northern end, or head, is about 3250 feet above sea-level, according to the best data at present available.

The head of the valley to the north is closed in by the Tang Hills, or southern spurs of the Khwaja (Khoja) Amran range of mountains, which here nearly join the north-western spurs of the Sarlat Hills, only leaving a gap of about a mile through which the Lora River runs into the valley.

The desert (which stretches away westward as far as the Persian frontier), rolls up in the form of sand-hills to the edge of the cultivated land of the valley, where it stops abruptly. There can be little doubt that it is encroaching on the valley, although the natives say that it is not. The sand-hills on the edge are sometimes about 100 feet high, with steep slopes towards the east, and their crests are very unstable, with the appearance of constantly shifting eastward before the prevalent westerly winds. It has certainly stolen in round the north-west corner of the valley until stopped by the hills. There is a curious isolated patch of sand-hills in the north-east corner of the valley, which have almost certainly resulted from a drift from the desert, though there is now no connection.

The valley is watered by the Lora River, which enters at the north end in a shallow, stony bed with low banks, but soon falls below the surface and traverses the length of the valley in a deep, wide bed, with high perpendicular banks. The height of the river at the north end of the valley is taken advantage of for the formation of irrigation channels, which are very numerous and extensive. The water supply is considerably assisted by a lake in the middle of the valley, near its north end, which is filled by overflow from the river when flooded, and acts as a reservoir. The Lora runs nearly dry in summer and its waters are always brackish, whence the name of the valley—from the Persian words, *shor* = brackish, and *ábak* (whence *áwak*) = scarcity of water.

The soil is a light, friable loam, very fruitful under irrigation. The crops chiefly grown are wheat and barley, and when water is abundant sometimes Indian corn. The system of tilling is to take one crop in three years, leaving the land to lie fallow for two. Flour-mills driven by water are numerous.

The valley is thickly populated, the inhabitants being a mixture of Barechi Pathans and Brahuis, who possess large flocks of camels, goats, and sheep. The valley is almost destitute of trees, as is generally the case with the country at large. It can hardly be doubted but that most trees would grow in Shorawak. A curious feature in the valley is the

existence of extensive mounds of evidently artificial origin, but as to which I could discover no legendary knowledge, the only answer the natives gave to questions on the subject being that these mounds were very old.

The origin of the valley itself seems somewhat obscure, for it is difficult to understand why the desert should come to an end where it does, instead of extending a few miles farther east, to the base of the Sarlat Hills, as it does in the case of hills a little farther north.

The following seems a possible explanation. The alluvial nature of the soil of the valley, and the general dead level of its surface, suggests at once its original deposition in still water. But it certainly could never have been deposited by the Lora River under present conditions, for, as already mentioned, that river runs in a bed many feet below the surface of the soil. It is suggested that the valley was once a lake, and that its basin became gradually silted up by deposit from the Lora, which fed it. If then the water from some cause forced its way out at the southern end of the valley, the present state of matters would have ensued, even to the formation of one or two false channels of the river, which now exist. For the water would at first drain off partially from different tracts, until one main channel had been worn out, sufficiently deep and far enough back to reach the river at the head of the valley and drain its whole volume as at present. The existence of such a lake would account for the desert ending where it does, as its progress while the lake existed must have been stopped by the water. It would also account for the patch of isolated sand-hills already noticed at the north-east end of the valley, as the sand might have drifted round the head of the lake, where the river was—and is now—in a high gravelly bed. Such a drift now would be stopped by the cultivation. Is it not possible also that the supposed lake may account for the existence of the artificial mounds mentioned? When its bed began to dry up, the richness of its soil would attract population, when its extreme dampness, and liability to floods (which must have been very great for a long time) may have led to the foundation of these mounds as village sites.

An interesting feature in the River Lora is that after flowing through the valley it enters the desert, where it is swallowed up in the sand. It has formed, I believe, an extensive swampy district, beyond which it never reaches, notwithstanding the very large body of water which it must discharge after rains.

The curious water channels of the country may be here mentioned, although they do not occur in Shorawak. They are called *karézes* (or *karéz* in the singular) and are constructed by a special class of men, who go about the country in gangs for the purpose. These men were originally Ghilzais of Kabul. The method is to sink a well where the presence of water is suspected, until it is struck, when it is led away by an underground channel till the slope of the ground enables it to reach

the surface. The channel is made by sinking wells at convenient distances, and excavating between them, and must sometimes be a great depth below ground, judging from the slope of the surface. It is difficult to see down the wells when deep, besides which they are often filled in above the channel. The number of these karézes is in places very great, dry ones being frequent, probably owing to their water supply having been tapped by more recent constructions.

Toba Plateau.—Much curiosity has been felt about a high table-land called "Toba," reported by the natives to exist on the north-eastern extremity of the Khwaja (Khoja) Amran range of mountains, and variously described by them as a place of great attractions, and the reverse.

Nothing has hitherto been known of this district, except from these native reports, and from a description of the route over the eastern extremity, from Ghazni to Quetta, which was followed by a brigade of the army in the old war.

A party—of which I was one—was organised in May 1879 to visit Toba, for the purpose of surveying and reporting generally on the country; and in the following notes I shall try to give a rough idea of the results of our reconnaissance.

The crest of the Khwaja Amran bifurcates at a short distance north-east of the Khojak Pass, and from there follows two lines—one nearly due eastward, and the other with a direction about N.N.E. Between these two crests is an elevated mountain mass, which extends eastward until it merges in the general confused mountain system of the country in that direction. This table-land has always been known as Toba, but we now find that it is divided into two portions called Toba and Tabin.

Tabin occupies the whole of the western portion of the table-land, and Toba the southern edge to the east of Tabin. They are separated by a narrow line of hills running about north-east by east, on the north side of which the surface of the table-land becomes a confused mass of hills, so that Tabin and Toba comprise all the fairly level ground.

The plain country of Tabin may be considered as a triangle with sides of about 13, 13, and 14 miles in length, within which the surface is undulating, with open valleys and flat bottoms. The drainage is generally from the southern crest northwards, all the streams combining at the north angle in one, which is called the Rod, and finds its way by a circuitous course into the Kadanai River. The western corner of Tabin drains to the south into the Pishin Valley.

Toba does not possess so much open country as Tabin. Its western end, known as "Mandan," is the most level portion of the whole plateau, but it is only about five miles wide, north and south, and does not extend more than nine miles eastwards, after which the country becomes hilly, with narrow valleys and only occasional patches of open plain. One of the latter, called Chagi, lies at the extreme eastern point of our reconnaissance, at a distance of about 50 miles from the western end of Tabin.

The drainage of the whole of Toba is northwards to the Kadanai River. Beyond Chagi there is said to be a plain called Tas, with drainage flowing by the Zhob Valley to the Indus.

At the eastern end of Toba, but separated from it by a valley, is the fine mountain called Kand, with a height of 11,000 feet. This appears on the old maps as "Joba Peak"—a mistake probably for Toba Peak.

The general elevation of Toba may be put at about 7800 feet. Tabin is somewhat lower, or about 7200 feet.

Tabin and the western part of Toba belong to the Atchakzai Pathans, while the eastern portion of Toba is the property of the Kakar tribes. There is a fairly recognised boundary, but quarrels about land are said to be frequent, leading to the deaths of several men yearly.

The Atchakzais are migratory, always resorting to the plain country in the winter, whereas the Kakars to a certain extent reside permanently on Toba, and for this reason pride themselves on being a hardier race than their neighbours.

As may be imagined, the winter climate of the plateau is very severe indeed, whence, I believe, the name Toba, an Arabic word meaning "repentance." When asked why it is so called, the people say, "Because it is so dreary and cold and the life is so hard up there!" For Tabin the reason given is that, "it is milder and the life is easier than on Toba," but I cannot find that the word Tabin has any meaning.

The plain ground everywhere is perfectly bare of trees and bushes, but on the sides of the hills and in the ravines there are trees of two kinds in considerable numbers, viz. the "obasht," believed to be the juniper cedar (*Zyzyphus jujuba*), and the "wanná," which is very similar to the mountain ash. These both grow in a stunted manner, as if cut down by the climate; the former is always extremely twisted and contorted, and the latter regularly pollarded. The obasht is nearly useless as timber, but excellent for firewood. The wanná gives a hard, tough wood. Its berries are also much eaten when ripe. Several kinds of bushes grow abundantly on the hill-sides, one of which is very similar to the English gorse.

The whole country is covered with "southernwood" or "wild thyme," which abounds everywhere in Afghanistan, and affords good food for camels, &c. Intermixed with this are various grasses and grass-like plants, of which all animals are very fond, so that the grazing qualities of the plateau are excellent. The table-land is generally well watered, though the natives say that it dries up so much in the summer that they have difficulty in watering their flocks. Wherever the ground admits of it, cultivation is carried on by irrigation, great pains, and some ingenuity, being bestowed on the distribution of the water. The chief crop is wheat—of the bearded variety; barley is grown to a much less extent, and Indian corn occasionally. Wheat is also grown on the slopes without irrigation.

The Atchakzais are not only industrious husbandmen, but possess large flocks of camels, sheep, and goats. The yearly routine of their lives is somewhat as follows. Early in spring the men leave their families in the plains, and go up to Toba—or Tabin—to prepare the dry lands for cropping, and the families, with all the flocks, follow towards the end of April. The harvest is reaped about the end of July, and the corn is at once threshed out by bullocks driven in a circle round a post. The men then proceed to plough the irrigated land for the next crop, which is sown before the great cold of winter comes on, when there is a general exodus to the plains. The ploughing is done by bullocks, and occasionally by camels. The plough is very similar to that used in India, but the wooden share is longer and is tipped with iron, so the ploughing is deeper.

Harrowing is done by dragging bushes over the ground. The women do not work in the fields, except perhaps at harvest time; they grind flour in hand-mills as required for use, but the bulk of the grain is taken down the valleys to be ground by the water-mills, which are common there but do not exist on Toba. The women also make butter in the following way. The milk is put in skins, hung on tripods close to a fire, and oscillated to and fro by hand. The butter is kept for use in the shape of "ghi," and sometimes sold for export in that shape.

I was surprised to find wheat growing, and giving excellent crops, on irrigated land, where subject to such severity of climate in winter, but this is due probably to the deep fall of snow which protects the young plant. From the same cause beautiful, short, green English grass is found in low and damp places, where the snow would drift and lie deep and long.

The table-land is dotted all over with huts admirably adapted to the climate. They are built on the side of a steep hill, with an entrance passage leading down to the body of the dwelling, which is consequently half-excavated below the surface. The walls are of mud, supported and strengthened by wooden posts, and the roof is also thickly covered with earth.

During wintry weather these huts shelter both men and animals, only the camels being left outside, and they are protected against the cold by clothing. In summer the huts are deserted, and the people live in their black blanket tents, made of goat's hair, wandering about the hills with their flocks. The goat's hair is used for these blankets, or mats, which are very strong and durable. The sheep's wool is chiefly sold for export. Camel's hair is not regularly shorn, but sometimes used for blankets for bedding. Sheep's skins are worn with the hair on, as coats called "poshtins"; these are very warm and comfortable, and are worn with the hair inside, except when it rains, when they are reversed.

The sheep are of the kind called "dumbas" (from *dum* = tail)
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because of their enormous tails, which are nearly as wide as the whole body.

Wild animal life on Toba is very scarce, and we only saw specimens of the following. A small kind of hare, a few "sisi" and "chikor" (both varieties of partridge),* sand grouse, and pigeons. Small birds—excepting a kind of lark—are very rare. The cuckoo was constantly heard. Lizards and land tortoise abounded, and two kinds of snakes were seen, one of which was killed and proved to be harmless. A scorpion was also killed. Fish abounded in some of the streams, of at least two kinds, one of which, a long thin fish, not unlike a white trout in markings, proved very good eating.

The approaches to the table-land from the plains are by the beds of mountain streams. These generally afford a fairly good road till near the crest, when there is invariably a very steep pitch, often impracticable for laden animals, and always difficult for camels with loads. Wheeled carriage is of course out of the question, indeed it does not exist in the country, even in the plains.

The climate of the plateau in summer is very pleasant. The days are of course hot out of doors; though the air is cool and bracing, the mornings and evenings and nights are charmingly cool. In future years Toba will doubtless become a sanatorium for the troops in garrison in Pishin, and very good sites for the purpose are obtainable.

GEOGRAPHICAL NOTES.

Death of Captain Carter and Mr. Cadenhead of the Belgian International Expedition.—The details which have come to hand respecting this most unfortunate occurrence are very discouraging to those who had looked forward to a continuance of the improved communication established some eight years ago between Zanzibar and Lake Tanganyika. The two travellers, on their way back to the coast from the lake, fell in an encounter with the armed bands of Mirambo and Simba, two powerful chiefs of the interior, who it appears had joined forces in order to make war, for some object not clearly defined, in the neighbourhood of the road between Unyanyembe and the station recently founded by the International Expedition on the south-eastern shores of Tanganyika. The locality of the encounter was a village called Mpimbore, situated ten days' journey from the northern end of Lake Hikwa in an easterly direction. Mr. Thomson, the leader of our East African Expedition, had passed through the same district in May last (some six weeks before the disaster), and from what he had observed of the state of the country and the character of Simba, had been induced to write to Captain Carter, strongly advising him not to take that route; but his advice unfor-

* Sisi = *A. Bonhami*; chikor = *C. Chukor*; sand grouse = *P. arenarius*.