

Ten thousand Kamozi Cafers who are situated to the north of Katar and Kampar, pay tribute to Shah Kator; they are very obedient subjects, and, unlike other Kohistanees, they do not rob.

Upper Kashkar under Malik Aman, is called Shighnan. The people are Sheeah Musulmans, who know nothing of their sect, beyond the name. They pray and fast with the Sunnees of lower Kashkar.

The horses are better than in the country of Shah Kator.

The principal places of Shighnan are Mastooj, the capital of Gouhar Aman Padshah, formerly; now under the son of Malik Aman; to the south is Daroosh; to the east Hujkoom; to the south of which is Shootee.

From Daroosh, via the Pass of Soori to Mastooj, two nights are spent on the road, infested by Cafers in the summer. The road is a gun-one. Guns can go throughout the country of both Kashkars beyond Daroosh, but up to that the road is difficult for laden horses.

Shighit to the north, and Shighnan to the east, are included in Kashkar, but under a separate rule.

From Shighnan to Shighit are five stages. The Cooner river passes to the west of Mastooj, and takes its rise in the lake of Neel. Beyond Mastooj, water runs to the north.

On the Assam Petroleum Beds (in a letter to Major JENKINS, communicated by him.) By Capt. P. S. HANNAY.

Mr. Piddington having supplied me with a specimen of Asphalte rock from Pyremont, I have taken some trouble in trying to find something of the kind amongst the numerous coal strata and bituminous springs which abound in the neighbourhood of this place, but as yet have not been successful in finding a calcareous Asphalte, which the specimen furnished appears to be, and this may be accounted for, probably, by the absence of anything like a pure limestone rock, existing with the carboniferous strata which is visible.

I have however the pleasure to send you a few specimens of the earthy Asphalte and indurated sandy Asphalte, found in and lying over the Petroleum beds, near a spot which I dare say you recollect as

Nahore Doong, an old Salt Well, situated about two miles from this, on the road to the Naga hills.

About 200 yards on the Jeypore side of this old Salt spring, the road crosses a vein of coal, of considerable thickness, accompanied by several beds of soft sandstone. This road is merely a ravine, which like many others, intersect the low hills here, in different directions, so as to give them the appearance of being distant from the more regular forms of the low range, which rise suddenly from the plain; in fact, many are quite detached, and rise in knolls of some 50 feet high, surrounded on every side by a natural ravine, in which coal, various soft rocks, shells and clays, usually associated with the former substance are seen on regular strata, and also detached pieces of fossil wood, clay iron ore, and exceedingly hard quartz rock. This kind of ground extends for about a mile E. and N. of the coal first mentioned, and I believe there are few ravines in which there is not an appearance of Petroleum, either exuding from under a mass of limestone on a level with the bed of the ravine, or at some height up the slope of the hillocks.

From this locality, or rather at two spots where, from the quantity of Petroleum visible on the surface, they are designated Tel Doong (or Oil-springs) I have taken the specimens now sent, but you must recollect that these are taken from the mere surface, and it is quite possible that a more interesting and valuable formation of the same kind might be found at some depth, particularly as regards the connection of calcareous matter with that from which the Petroleum is thrown up. I mention this, because, from the appearance of the specimens of blue limestone found in the bed of the Dehing River, under the water (it being evident that this river cuts through the whole of the strata before-mentioned) it might be possible to find at the depth of the Dehing bed, inland, a purer limestone than that which is on the surface. However it may be as well to say, that the different strata appear to bend Eastward, and dip to the South towards the high range of Naga mountains, in the lower portions of which there are numerous salt springs, the prevailing rock there being *clay slate*. Nothing like mountain limestone is to be seen, as far as my travels extend, on the Assam side of these mountains: and I have an idea that without some extensive formation of this kind in contact with our carboniferous strata or bitumen springs, we shall fail to find a calcareous

Asphalte like that of Pyremont. Our coal is, I believe, considered to be that of the higher series of secondary rocks, if then we could find bitumen springs at the foot of the high range on N. B. of the Burrampooter, possibly a rock of the description would be found, but this is a question for Geologists to determine.

Jeypore is not the only Petroleum locality in Upper Assam ; Borhath, Teroogong, Magawn, Namdeng and Namtchuk Pathar are noted for their earth oil springs. These are all situated in the low range of hills forming the base of that vast range of mountains which, bounding the Kymdwar valley on the West, would appear to run down to Cape Negrais. The first locality to the Westward is close to the Dekho River, south-east of Seeksagur ; but it is said that amongst the Nagas on the Western branch of this river, salt wells do not exist :* on the Eastern branch of the river, however, there are many salt wells, and near the source of this branch, in about Lat. $26^{\circ} 20'$ the mountain range above-mentioned separates from the more western Naga ranges which run towards Cachar. The great Salt, Coal, and Petroleum deposits seem therefore to commence with the east branch of the Dekho, and continued east as far as the Namtchuk river. At Namtchuk Pathar, near the mouth of the river, the Petroleum exudes from the banks, and a bed of very fine coking coal runs across the bed of the Namtchuk. The hills here are also intersected by ravines, and in one spot an extensive basin or hollow is formed at some height, which contains muddy pools in a constant state of activity, throwing out, with more or less force, white mud mixed with Petroleum. This is indeed a strange looking place, and I am told by the Singphos that at times there is an internal noise as of distant thunder, when it bursts forth suddenly, with a loud report, and then for a time subsides. Whether this may be the effect of distillation going on in consequence of the great mass of vegetable matter which lies under the surface, or from some more remote cause connected with volcanic action, it is impossible for me to give an opinion ; but from the connection of the Potkae with the Arracan range of mountains, the known existence of mud pools like these, in that

* This is a mistake, there are salt springs on the banks of the Nambur and Dhunsiri rivers, and it is supposed there are many more, but the Nagas West of the Dekho do not make salt, except at Semkur in very small quantities. By their traffic in cotton they obtain salt perhaps cheaper than they could make it.

Province, and the fact, that the motions of our earthquakes are generally from south to north, I have often thought that during an active state of some of the volcanoes in the Gulf of Martaban, they might affect us here.

The Tel Doonga, or Oil-springs, and probably containing salt, are the resort of the wild animals of the forest, who eat the mud, particularly elephants, buffaloes and deer, and securely placed on a Michong, formed in one of the largest trees overlooking these pools, the Shikarrees of this frontier silently await, in the moonlight nights, the visits of these animals, and with a poisoned arrow fired from a musquet, shoot the largest elephants, which are afterwards tracked down probably for days. If the animal has a fine pair of tusks, the price of these amply repays the trouble and privations suffered in obtaining them;—most of the ivory of the Singpho country is obtained in this manner. The springs in this neighbourhood afford good sport to the Shikarrees of the corps, and many a load of Saumer Deer flesh comes into cantonments, the result of a night's watch at, or an early morning visit to, the Tel Doonga.

No. 1 Basket, contains specimens of soft rock through which the Petroleum rises: the whole mass of substance seems to be impregnated with it; the soil however, is sometimes by itself in fissures and seams, running out as these are cut open. The Nodules are found embedded in regular veins intersecting the soft rock, and more or less oil is found mixed up with them. I have not dug deeper than ten feet into the bed.

No. 2, contains the Earthy Asphalte which is found in considerable quantity, where the Petroleum oozes out, and also adhering to the soft sandstone rock impregnated with, and laying in, the Petroleum bed.

No. 3, contains the indurated sandy Asphalte rock, which I found overlying the spot where Petroleum exudes from under the low hills, of which it is in fact a portion, more or less of the red clayey soil being also impregnated with the bitumen; and the distinguishing feature of the soil of the hills in the Petroleum vicinity, is a peculiar dryness, however wet the weather may be. The soil bears a thick tree jungle, principally of a species of oak, the *acorn*-fruited Hingooree of these parts. None of the specimens shew the presence of lime, but a hard rock, which effervesces slightly with acid, does not slake when burnt, and flies into splinters when heated, passes through the Petroleum bed: specimens of this limestone I sent to you some years ago, calcined and

pounded. It would, I think, make a cement similar to Parker's, or the Roman cement.

No. 4, contains specimens of a conglomerate containing lime, forming a conspicuous rock a mile from this, directly on the edge of the river on both sides. In connection with this, indeed in some places adhering to its lower surface, as well as in the bed of the river itself at the same place, is the blue rock containing lime; from the quantity of pure carbonate of lime adhering to the surface of one of the pieces, we might reasonably suppose that a rock even purer than the specimens now sent, does exist in the same place; but the depth of the water will, I am afraid, effectually prevent its being worked; what is found of this blue rock however, when burnt carefully, slakes into a very good buff coloured lime, quite fit for building purposes. The conglomerate when burnt, partially slakes, and, when pounded up, forms a very strong cement, well adapted for flooring or roofs, or lining of water tanks, &c. Accompanying these specimens, I have sent a sample of a mixture of Asphaltic earth, and pounded unburnt conglomerate fused with a small quantity of the mikai tree rosin, also a few pieces of the clay and ore of the soil of the *hills* of the Petroleum locality: there appears to be too much earth in it; as another trial I have made by covering the top of my boat, has succeeded very well, I do not see why we could not use the earthy Asphaltic with success, in covering matting or plank roofs of boats or houses; it deserves a trial certainly.

Remarks upon the occurrence of Granite in the bed of the Narbudda.

By Capt. J. ABBOTT, B. A. Late Principal Assistant Commissioner, Nimarr.

In a report upon the Mhahlie Cotton of Nimarr, which I prepared about two years ago, and which, I believe, reached the Asiatic Society, I stated, that the trap stratum of Malwa was not penetrated to its base, even by the river Narbudda, which has mined its bed 1600 feet below the table summit of the Vindhécias.

Some weeks after the despatch of this report, I visited an island of the Narbudda, opposite Mundlaisir, in order to inspect a block of grey granite, which I supposed had been accidentally deposited there.