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1828.
JOURNAL OF A ROUTE THROUGH MYSORE, THE COORG COUNTRY, CANARA, AND MALABAR;

Performed in the course of a Survey, in the Years 1804 and 1805,

BY THE LATE LIEUT. COL. WM. LAMBITON.

MULLAPUNNABETTA is noticed only as being one of my principal stations in carrying on the survey, and whose meridian has been fixed with great accuracy. It is a hill lying about seven miles nearly west from Chenroypatam, and has a pagoda on the summit, on the platform of which is the station marked by a small mill-stone. Its situation is very favourable for being of use in the surveys of roads, &c., and is in the neighbourhood of many others whose positions have been determined. It lies in latitude 12° 55' 07" N., and longitude from Madras observatory 3° 57' 59" W.

From this hill is seen a great extent of country. There is a full view of the mountains which form the range of western ghauts, of the Bababooden hills, and others in that direction. All this district, and particularly that part of it lying to the north-west, abounds with large fortified villages, the most respectable and populous of any in the Mysoor country. Chenroypatam, Hassen, and Baaloor, are all seen from Mullapunnabetta, and the more distant objects are numerous, the whole extent from the Shevagunga and Saven-droog range to the western ghauts being visible, and contains a vast number of prominent objects well adapted for military surveys. The country from the north, round by the eastward to the south, appears like a vast plain richly cultivated, well supplied with water, and adapted for every kind of military movement. The great road from Chenroyputtum to Monjerabad passes near the foot of the hill.

November 23d.—Left Mullapunnabetta and marched to Kubbettera, about twelve miles to the westward. The road is a by-path the whole way; the country is a little broken and partly cultivated, with plenty of water. The ground admits of strong positions, being defended on every side by hills, and pagodas on the tops of them, with small ridges, tanks, &c., and sufficient space for large encampments. The village of Kubbettera is to the S.E. of the hill, nearly at the foot of it.

November 24th.—Marched to Koondoorbettera, being distant about twelve miles nearly in a W.S.W. direction. The country is much broken, though the road admits of being made good. The features of the country here are altogether different from what we see to the eastward. The hills are covered with a light jungle growing on a beautiful turf, and partly in cultivation. The vallies are flats well supplied with water, and are all luxurious rice grounds. The soil in general is of a darkish sand, and much richer than that to the eastward. We crossed the Yegachewhotty river about half way in the march. This river has its rise among the Bababooden hills, passes Baaloor, and falls into the Harmawatee, a little way below where we crossed it.

Koondoorbettera takes its name from a village (named Koondoor) a little way to the north-eastward. It is one of my principal stations, and is well adapted with many others laid down in the plan for carrying on military and other surveys.

November 26th.—From Koondoorbettera we marched to Kënsama Oosetta, a large village on the borders of the Bulliam district, and on the great road from Chenroypatam to Mangalore. The distance from Koondoor is about eight miles through almost a continued jungle; some parts of the road are very good,
good, and other parts broken, though capable of being made practicable. The face of the country is beautifully romantic, the hills are of gentle acclivity, free from underwood, the timber of light growth, of great variety, and the surface of the ground covered with a green turf. The soil is a darkish loam and produces rich crops, particularly in the vallies where cultivation is mostly attended to.

Munjerabad lies about eight miles N.W. from this place; the road crosses the Hämawattee river, which divides the Bullum country from Mysoor.

We now approach the great range of mountains forming the western ghauts, and which constitute a natural and almost invulnerable barrier towards the sea-coast, overlooking the low countries of Canara and Malabar, which commence at the foot of the mountains. The districts above are Bullum, the Bednore, and the Koorg. The Bullum begins near this, and occupies the great re-entering turn of the range. The Bednore district lies to the north, and continues from Ballaroya-droog northerly beyond the limits of this survey; to the south is the Koorg, which runs southerly to the Poodicherrum pass, and by a late cessation of territory extends below the ghauts almost to the sea-coast. The nature, features, and produce of these three districts nearly resemble each other. Each is formed of high hills and deep vallies, naturally fertile and very populous: the mountains are mostly bare, while the ravines are covered with thick jungle, and in many places ancient forests, inhabited by a variety of wild animals. The duration of the rains, which commence in the middle of May and continue till November, gives rise to a number of large as well as small rivers that flow the whole year, and take different directions. The Cavery has its source in the Koorg, and the Toomboodra among the Babaooden and neighbouring hills. These two great rivers, issuing to the eastward, are obliged by the superior elevation of those high mountains to continue their course in that direction; and the Cavery, after a circuitous route, finds its way to the eastern sea, while the Toomboodra falls to the N.E., and empties itself into the Kistna. The waters which fall to the westward rush down into the lower districts of Canara and Malabar, and form innumerable little rivers which intersect these countries and fall into the sea at a great number of places.

There are two great roads leading through the Bullum to Mangalore; the one generally frequented is that leading down the Bisslee ghaut to the north of the Soobramanee mountain. The other passes by Munjerabad and down the Cissel ghaut. I have not seen either of these passes, but the Bisslee is said not to be difficult, but long.

On the 28th November we left Kensama Ooscotta, and proceeded through the Koorg, which commences about four miles south from Ooscotta on the south bank of the Hämawatta. At this river we were met by the Rajah's people, and two elephants for our accommodation; we forded the river on these animals, and proceeded thence to Hoodlipett, a village about four miles further south. The ford is not difficult nor the river deep, but the banks are rather steep. From the river to this village is an open country with some breaks, but the road is not bad. The Rajah had directed such strict attention to be paid to us, that not a follower was allowed to pay for an article, and to have declined accepting these marks of hospitality would have caused great mortification, if not offence. I therefore permitted my people to receive every thing gratis.

The village of Hoodlipett had formerly been very extensive, but was nearly destroyed some years ago by the late Tippoo Sultaun; at present it consists of one street and a kucheree.
On the 29th we marched southerly to Gondhully, a village near ten miles from Hoodlipett, and over hill and dale the greatest proportion of the way. The first part is open, with some scattered trees and shrubs; the lowest parts of the valleys are cultivated with rice, the chief grain in the Koorg. The country soon became wild and woody, but the road had been opened for us through a forest hitherto impassable, and is now almost a gun-road with very few serious impediments; the continual succession of hills and valleys present the chief difficulties. We are attended on the march by a large hunting party, consisting of near 200 men, intended to amuse us after we came to our ground: about two hours after our arrival we went out to enjoy the diversion, and in this romantic country it was truly entertaining. The game consists of elk, deer of various kinds, hares, wild hogs, &c., and the hunters are divided into two sets, one with sticks, whose business it is to range over the ground and start the game; the other set are provided with matchlocks, and are stationed behind the trees and bushes, arranged in such a manner as to fire in particular directions. These are scattered about, and place themselves near the paths frequented by the animals. During all this time the ranging party are screaming in all directions, accompanied by the wild notes of the colour-horn, tom-toms, and occasional firing by the matchlock-men. In this manner the remainder of the morning was passed, while we were seated in trees prepared for us, attending to the diversion of the chase. In these woods are great numbers of wild elephants.

The Koorg, like all mountainous countries, is strong by nature, being full of heights and ravines, with a great proportion of wood-land, and every rising ground would present a new impediment to an invading army; there would be, besides, two rivers to cross, the Hemawattee and the Cavery. The supplies would be but scanty, for though the soil be very rich, and the country populous, the cultivation is but trifling, the chief food of the inhabitants being the flesh of animals killed in hunting, with a little rice and milk; cattle, however, are in great abundance, and in high condition from the luxuriance of the pasture; but bazaar articles must be had from other quarters. The whole country is well supplied with water in every season of the year. We crossed the great road from Ramnakporum to Soobramanee not far from this village.

On the 30th we continued our march to Somawurpett, about ten miles in a S.W. direction, still attended by our hospitable hunters and our vaeeel (Moottanah), whose name is worthy of being mentioned. About half-way we crossed a little rivulet, the boundary between the Saub-hazar talook and that of Somawurpett. Here our huntsmen left us, and were relieved by another set equally attentive to our wants. On our arrival all the inhabitants of the neighbourhood were collected in the village to see us; the street was cleanly swept, and the kucheree and two other houses were prepared for our reception. Information had been sent the evening before by Moottanah, and large elk had been procured, which were sufficient for all our followers; to us they were unnecessary, for we had been amply supplied the evening before. Besides the great variety which the forest and rivers afforded us, a shepherd and his flock attended us from our first entering the country. Truly gratifying are such offerings of kindness, where the acceptance seems to produce the only competent return to the hospitable motives from which they flow.

It is remarkable that the inhabitants of these two talooks, who are all united by one principle of obedience and respect to their Rajah, should have a particular distinction in their dress and customs, and this appears on the opposite banks of the brook which marks the boundary. In the Saub-hazar talook the
the villagers are dressed in a coomly, which passes over the left shoulder, leaving the right one entirely naked, and being wrapped round the lower part of the body as low down as the knee, it is tied round the loins by a kind of sash or belt. In the Somawurpett talook they wear a white vest, covering the whole body down to the knee, and buckled round by a belt; some few, however, of the lowest caste wear the coomly, but they are very few. There is also a marked difference in beating the tom-tom and sounding the colory-horn.

The whole of this march has been through a continued forest, over mountains and valleys, some of which are very steep, and in many places the road is crooked and narrow, but excepting in one spot, there would be no difficulty in preparing it for guns. There are some narrow strips of paddy ground, which draw the wild elephants out of the jungle in the night time, and the inhabitants have places in the trees where they wait the approach of the animals and shoot them: great numbers inhabit the forests through which we passed this day.

December 1st.—Left the direct road which leads to Marakerra, and marched to Kotakul, about eight miles westerly. A considerable part of the road was over the tops and along the sides of the mountains. There had been much rain in the night, which left a thick fog till one o'clock P.M., when it cleared up, and afforded us a distinct view of the country. It appears to be an entire mass of mountains, covered with light wood and a beautiful verdure, on all of which the pasturage is abundant, and affords forage for innumerable herds of cattle. The valleys are narrow winding strips, mostly cultivated with rice, and the lower parts of the declivity of the mountains are thick forests, inhabited by elephants, tigers, bears, elk, and deer of various kinds, such as the antelope, the spotted deer, and another small kind, which the natives call the jungle sheep; besides these there are numbers of monkees, jackalls, foxes, &c. Before we arrived at Kotakul, another party of hunters met us on the road; and attended us to the village at the foot of the hill, where preparations had been made for our reception, and all supplies collected that were necessary.

About three o’clock, the weather being pleasant, we ascended the hill, where we had a distinct view of the ocean. All the range of ghauts to the northward are seen, and appear a vast confused and broken mass of mountains, apparently full of small passes, which the inhabitants say are practicable for men but not for cattle. The Soobramaneey mountain lies about five miles west from this hill, and towers high above the rest, being no less than 5,611 feet above the sea. Kotakul or Koondhully being one of my principal stations, I moved up with observatory tent and apparatus on the 2d December. There had been some rain during the preceding night, with heavy wind from the east; towards the evening the atmosphere was pretty clear above the ghauts, but hazy below.

December 3d.—Some trifling rain last night, and a thick fog in the morning; the gale still high from the westward. The evening became very clear, both above and below the ghauts, with some flying showers to the east: the tops of the hills in the low country are very distinctly seen, and a clear ocean at sunset. The nearest part of the shore from this hill is about fifty-four miles.

December 4th.—Heavy wind from the east during last night; this evening clear.

December 5th.—Stormy gale still continues from the eastward; returned down the hill; and next day returned to Somawurpett.

On the 7th we proceeded on our way to Marakerra, where we arrived on the 8th. The country the whole way an entire wood, and the distance from Somawurpett
Somavrpett about nineteen miles. The mountains are covered with thick forests, particularly as we approach the capital. The road during the march on the 7th might be travelled with guns, but the march on the following day was through a rugged country full of narrow and winding defiles, well protected by the jungly heights. Round the capital the hills form an amphitheatre, and the different roads enter through gateways connected by an old line and ditch, extending all along the tops of those ridges.

Our arrival being announced to the Rajah, he returned a message that he would receive our visit about one o'clock; at which hour we attended, accompanied by Capt. Mahony, the resident, and Colonel Gordon, adjutant-general at Bombay. His palace is within the fort, on one side of an open square. The front apartment, in which he receives his European friends, is furnished in the English style with looking-glasses, pictures, carpets, chairs, &c. He received us with his accustomed cordiality, shook us by the hand, and politely asked us to sit down, taking himself a chair. His first inquiries were to know how we had been accommodated since entering his territory, with a solicitude truly interesting, and which gave us an opportunity of giving a faithful account of the hospitable attention of his subjects, and of impressing on his mind the merits of our friend Mootanah. After some questions on various subjects, he took us through the different apartments of his palace, which is neatly built, particularly the zenana; this he gave us an opportunity of seeing during the absence of the ladies. The remainder of the afternoon was employed in showing us the various curiosities given him by English officers, and amusing us with his wrestlers, tumblers, fighting rams, &c. In the evening he accompanied us to dinner at the Resident's, and entered into various subjects of conversation and argument.

The fort of Marakerra stands upon rising ground, nearly in the centre of the amphitheatre of hills by which it is encompassed, and is an irregular pentagon, with tower, bastions, and a small work to cover the gateway on the east side, with two bastions similar to the other, now in ruins. The door enters on the north face of the projected work, but at present it is covered by a recent line extending still farther south, and enclosing an area in which is the kucheree. The gateway into this area is from the east. The whole work is surrounded by a narrow dry ditch, with a double covert way; without that again is an extensive glacis, or rather esplanade of steep descent, and terminates in the hollow in which is a strip of paddy ground extending round the whole, forming another large ditch, but having both its sides accessible, would therefore render it a secure lodgment for an enemy. The Rajah, however, sets little value upon his fort, depending altogether on the natural strength of his country in case of an invasion. During the campaign of 1791, this fort was in possession of Tippoo's forces, the Rajah being then in captivity. When the Bombay army arrived he effected his escape, and was offered assistance to retake his capital: but he refused it, and rested on the confidence he had in his own talents. His plan was to cut off all communication by getting possession of the different avenues by which the supplies would enter, and in a short time the garrison were on the eve of surrendering, when a circumstance happened which would reflect honour upon the heroes of any age or country. At the time the provisions were nearly expended, a convoy was sent by the Sultan to be thrown into the place, with a considerable force to protect it, commanded by a sirdar who had been the means of the Rajah's escape: knowing that a failure to relieve the distressed garrison would have cost the life of his benefactor, the generous prince suffered the convoy to pass and the escort to return
return unmolested. This act of magnanimity, which only prolonged the siege for a few weeks, had its reward in the surrender of the place and the admiration of the English army.

We remained at Marakerra three days, two days of which had been taken up with hunting, shooting, &c. with the Rajah, who is himself a famous marksman. I had proposed moving on the third day (11th), but a very pressing request came down in the evening preceding, that we would not think of marching, as that day was an unlucky one. To satisfy the anxiety of the good man, who perhaps combined a considerable share of hospitality with superstition, I therefore deferred taking our departure till the day following, and in the evening we went to take leave, when we were entertained, as usual, by a display of many curious things, the produce of his own ingenious workmen, in imitation of European manufactures, such as gun-locks, steel chains, &c. fully equal in elegant workmanship to the originals, though of the very best kind. After remaining about an hour, we proposed taking leave, when we were presented with each a handsome shawl, and a war-knife elegantly set in gold. We then took our final departure.

The government of this little community is purely patriarchal, the prince being the father of his people, and in him resides all powers, legislative, executive, and judicial. Few laws must suffice where there are so few wants, but whatever is considered as such is scarcely ever violated. Among those which concern strangers, there is one regulation which ordains that no traveller shall ever be in want while he remains within the Koorg territories, and that if he be poor and needy, he is to be supplied with every necessary gratis; and when he quits that hospitable soil, he is to be furnished with as much money as will procure the needful when he arrives at the next inhabited place. The customs of war have so distorted the human character, that it is difficult to reconcile those discordant and hostile elements which compose it, and this liberal native has his enemies, who accuse him of the most wanton cruelties. But a man capable of dictating such benevolent institutions, and who is himself the immediate example of whatever is beneficent, charitable, and good, cannot surely be a monster in principle.

The nature of the country, and the customs and habits of its inhabitants, conduce to inculcate a martial spirit, and every family being supplied with arms, partly to procure their subsistence and partly to defend themselves against the wild animals, it requires little time to put this country in a state of defence. From what I can learn, 10,000 fighting men could be brought into the field at the shortest notice. The Rajah's household troops being a more regular body, are supplied from different families, where the males take their tour and attend for a certain time. While embodied they are trained to arms, after the English mode of discipline, so that in fact this institution furnishes a nursery for the efficient force of this little kingdom. Previous to Tippoo's reign the fighting men must have been much more formidable, for at the time of the Rajah's captivity, when this district was over-run by the Mysooreans, upwards of 60,000 inhabitants were swept away, many of whom were put to death, others kept in confinement or slavery till the fall of Seringapatam, when they made their escape, and are now with their Rajah.

The household troops have the musket and bayonet the same as the Company's sepoys. The arms used by the rest are the matchlock, the spear, and the war-knife, which is hooked, and the edge turned inward; this they wear on their right hip, uncovered, and ready to take off when they rush upon the enemy. The instrument is broad and heavy, and one stroke with it is sufficient
cient to sever the head from the body. Small daggers are also worn, which are useful in ambuscades or close attacks. The Rajah's notions of defence are certainly well adapted to such a country. Despising the system of being cooped up within a fort, which must ultimately become the point of general attack, his principle is to possess the avenues and defiles, to lay in ambush, to harass and cut off the enemy's convoys, and to seize every opportunity of surprising him, but to avoid open action unless there be a manifest advantage. Had the late sultana pursued such a system, the English army never could have reached the table-land of Mysore.

On inquiring respecting the manufactures, I find they are but few. Their arms are all made in the country, and the coomlies worn by the lower order of people; but the white cloth of which the vests are made is brought from Cannanore and Tellicherry, and their returns consist of rice, sandal-wood, pepper, &c.; honey is also in great abundance. The salt, used in the country is brought from Malabar or Canara, but I should rather think can be made within that part of Koorg lying below the ghauts. That district lies on the great road from Marakerra to Mangalore, and the ghaut down which that road leads, and which we followed, is called the Yellaneer pass. It commences about nine miles north-westerly from Marakerra, and is a steep descent with little variation to the bottom, being a distance of about three miles. It is in general good, and scarcely at all affected by the rains; the composition of which the mountain is formed being a mixture of clay and loam, becomes hard when exposed to the air; a very little repairing would make this ghaut very practicable for any thing but guns and carriages, and even these might pass with the assistance of men and elephants. Kuddamakul, to which we came in one march from Marakerra, is about eighteen miles distant, and near three miles from the bottom of the ghaut.

On the 13th December we marched from Kuddamakul to Chôkady; the distance is about fifteen miles westerly; the first part of the road is very good, but the whole distance is through an entire jungle.

On the 14th marched from Chôkady to Bellarie, about eight miles, still westerly, the road through an entire jungle, and over ascents and descents as usual.

On the 15th, from Bellarie to Pôtoor, distance about twelve miles westerly, the road in general good, and the country more open. The jungles are full of the pepper vine, and the features of this low land are beautifully variegated with small verdant hills, rivulets, ravines, &c.

I was detained at two stations, Bullanandgoeda and Bullamullee, from which the country is seen at a great distance. On the 23d marched from Pôtoor to Mangalore. The road crosses the Buntwaal river at Buntwaal, and continues along the northern bank the remainder of the way. The face of the country is much broken, full of barren hills, round which the vallies wind like the beds of rivers, quite flat, and richly cultivated with rice. These windings have every appearance of having been made by an ingress of the sea, and the hills are all formed of that composition formerly mentioned, which is now become an entire rock, quite naked near the sea, but covered with lofty forest trees towards the great range of ghauts. This composition is excellent for roads, as they are easily made with it, in the manner of pavements, and will continue years without repairs; it is likewise excellent for fortification, for though hard it is not brittle, and therefore not subject to splinters; it is likewise used in building houses, and all the villages along the coast are built with it, and have a neat appearance.
Mangalore is a place of great population, containing at present nearly 12,000 inhabitants of different nations, and although it is not remarkable for any manufactures, it is a considerable mart for various kinds of merchandise conveyed thither both by land and sea. The harbour is only suited for small craft, and this is within a bar which continually changes its entrance; this bar is a continuation of the breach through which the river and the sea have formed a communication, and within which there is a large basin, running up a considerable distance to the northward, and is completely land-locked, but the water is only a few feet deep when the tide is out. The late Tipoo Sultan had a marine yard near the mouth of the river; and in the year 1782, when the English took Mangalore, there were two large ships then on the stocks, pierced for sixty guns, but these vessels were flat-bottomed. The common craft is the doni, a beautifully modelled vessel, rigged with two masts and lug sails, and the planks of which it is built are sewed together, and painted over. They draw very little water, and are calculated either for running in shore or standing out to sea.

The justly celebrated defence of this place in 1782 is recorded among the transactions of those days, and is one of the most brilliant events that ever graced the military annals of any country. The garrison, commanded by Lieut. Col. Campbell, consisted of 3,550 men, 696 of whom were Europeans, including ninety-one officers. The whole of the sultan's force amounted to 140,000 fighting men. The fort, which has since been blown up, was then a square stone work, with a cavalier bastion at each angle. On the side next the water, as well as on that next the land, to the eastward, there appears to have been an advanced work similar to a horn-work, and the whole circumscribed by a deep ditch, across which, on the east side, has been the entrance into the work; a covert way and regular sloped glacis has covered the whole on the three sides next the land, a lower glacis has served next the sea, whose slope comes nearly to the water, terminating in a quay where the donies now land their cargoes, and the glacis may be said to be separated from the quay by a row of coco-nut trees, leaving sufficient room for the purpose intended. Without the ditch, on the S.E. angle, there has been a small redoubt, which was defended during the siege, while Tipoo's forces had possession of the N.E. part of the horn-work.

About three-quarters of a mile N.E. from the fort, where the edgah now stands, is a crescent of table-land, considerably elevated above the fort. This crescent is curved towards the east, and a line of works, with five cavalier bastions, all included within a ditch, have been erected, the whole forming an advanced intrenchment to act against an enemy from the land. This position, as far as I can understand, was taken by a part of the troops forming the garrison, but being too extensive to defend, and commanded by the ground to the eastward possessed by the enemy, it was thought advisable to relinquish it and retire into the fort, giving place to Tipoo's forces, who now began the more immediate operations of the siege. Taking post on this commanding ground, their approaches were carried on towards the N.E. angle of the horn-work, covered by a high cavalier at the S.W. extremity of the crescent and nearest the fort, aided by the fire from this cavalier, they soon brought their advanced works to the glacis, got possession of the horn-work, and breached the body of the place.

The circumstances of this siege now became truly interesting on both sides: the brave garrison, pent up in a fort without bomb proofs and without provisions, had suffered every calamity that the human mind can conceive; though
though reduced to a few, and that few feeding on their dogs and horses, and seeing at last a breach effected, and a numerous army moving on to the assault, they were not dismayed either by superior numbers or the hopeless prospect of retreat. Often did the enemy advance to the breach, and as often were they repulsed, till, wearied out with fruitless attempts and galled by the fire from the redoubt at the S.E. angle, they at length retreated, leaving this gallant band to contemplate their own glory, and the happy result of their exertions. But their miseries did not end here, for notwithstanding a cessation of arms, which had just taken place between the English, French, and Mysoreans, the place continued to be blockaded by Tipoo's army, and the garrison for several months felt the increasing hardship of famine, till at last the brave commandant received orders from the Madras government to propose terms of capitulation, when it being agreed on that some fort in the Carnatic should be given up in place of this one, they marched out with the honours of war, and soon after embarked for Tellicherry.

This place never can grow to great importance, in a military point of view, on account of the extent of ground which it would be necessary to occupy against a land attack; but might be defended against any force by sea, unless that force was favoured by the inhabitants of the country, and suffered to run up some of the neighbouring rivers, and advance from the eastward, but the interior country would present innumerable impediments to an invading enemy.

December 28th I left Mangalore to proceed down the sea-coast, with a view to fix the positions of some remarkable places, and to carry down a series of triangles as far as Cannanore, that may serve hereafter as a foundation for a more minute survey of that coast, at present but very imperfectly known. I marched this day to Munjeserah, about ten miles to the south of Mangalore. We crossed the river in a large vehicle formed by three small donies, covered by a platform for conveying horses and cattle. The road runs nearly along the beach the whole way. There is nothing remarkable along the coast except a few projecting or elevated points, on which are the ruins of redoubts.

On the following day continued our march to Coomlah, near ten miles further down the coast. There are two rivers to cross towards the end of the march, between which the fort of Coomlah stands, upon rising ground. I had not time to examine it minutely, but it is a rectangular work, with a large gateway on the north, and there is a high cavalier within the fort, and an advanced rectangular line towards the sea, communicating with the fort on the west side. The whole is defended with circular bastions and a dry ditch. The road runs along the beach nearly the whole way, and these rivers are pretty broad at high water.

(To be concluded next month.)
On the 4th and 5th January 1805, marched to Kasragoodo, distant from Coomlah about nine miles. The road runs at some distance from the beach along the hard tract, and is very good in general. Crossed a river about half-way.

The fort of Kasragoodo stands on high ground nearly a mile from the beach, and about half a mile from the inlet of the sea which receives the Chanderagerry river, two miles south. This high ground is insulated by the water on the west side, and by paddy fields or very low grounds on the other sides, forming a deep ravine, but entirely exposed to the fort or its outworks.

The figure of this fort is irregular, and stands on the table of the hill. On the west or sea side is the gateway, defended by small bastions, and projecting out it forms the principal defence of that side of the work. There is a circular bastion on the right and another on the left at a considerable distance from the gate, and are connected with it by ramparts, each making a salient curve, and may be well defended; these form the entire face towards the sea. The remainder of the work consists of three sides of unequal lengths, the longest being to the north; at the S.E. angle of the fort stands a high cavalier, on the east is a small garden and a well, communicating with the interior by a small sally-port leading under the rampart; on the outside is a narrow ditch circum-scribing the whole work. The rampart is not more than nine or ten feet broad, and the parapet about eight feet high, full of loop-holes. The N.E. part of the hill on which the principal work stands, projects some distance from the ditch of the fort, and has had a line and narrow ditch to defend it, which are now in ruins. All these works are built of the hard composition formerly mentioned, and although near 300 years old, are yet in good state, and might soon be put in repair. There is abundance of good water within the fort, and the position is no where commanded by the high ground on the opposite side of the ravine.

On the 6th January, marched to Bakul, about eight miles further down the coast. We crossed the Chanderagerry river about two miles from Kasragoodo. The fort of Chanderagerry stands on its south bank on an elevated situation, forming a small peninsula, having the river on the north and N.W., and a deep hollow, with paddy fields and a tope, on the south; and another similar hollow runs on the east side, the neck of the table-land being on the S.E., along which runs the great road. The fort is nearly triangular, having the gateway on the N.E., which cuts off the angle and forms a short side sufficient for the gateway and the works that defend it. The other three sides are to the E., S., and N.W. The angle formed by the east and south sides projects towards the neck of land, which subjects it to an oblique fire from both these faces, and from the direct fire of three large circular bastions, one at the salient angle, another about a third of the way between that angle and the gateway, and a third nearly the midway on the south face.

The three longest sides are all as well flanked as the construction of these kind of works will admit of, and the slope of the hill forming a perfect glacis, no part can be approached under cover. The ditch which surrounds the whole is a dry one, and broadest towards the neck of land. The berm is not sufficient
ient for placing scaling ladders, and the height of the parapet from the berm being upwards of thirty feet, it therefore follows that the place is tenable against escalade, and thence the necessity of opening trenches, which can only be done on the neck of land for batteries to act with effect, and there the hardness of the ground would render it almost impracticable.

This work has four large circular bastions and four small ones; a cavalier over the gateway forming a kind of traverse; and a small lower work in front of the gateway, having a face with two small circular bastions to the north, and flanks to the east and west. The rampart within is almost ten feet broad, and the parapet seven feet high. The area is nearly level, and has an excellent well within it. This work is not large, and with a little amendment might be made very strong. It is built of the same kind of composition as the others, and by lowering the parapet, raising a banket, and opening three embrasures in each of the large bastions, it might be defended by a small body of men against a large army. The great defect of this, and all Indian works that I have seen, is the height of the rampart above the glacis; for where batteries can be erected, they can breach to the foot of the wall.

After leaving Chanderagerry the road runs along the upland, and is good the whole way to Baekul.

The fort of Baekul is irregular, and has the north side nearly straight, as well as the greatest part of the west face next the sea. It is a curve to the S.W., and continues so to the S.E., where it has been breached by the English in 1782, and afterwards repaired by them all along that side, where four bastions have been completed, with the intervening ramparts, and form a re-entering curve. The gateway enters on the N.E., being well protected, and covered by an advanced battery. The principal work consists of fifteen circular bastions, seven of which have been repaired during the Sultaun's time, and embrasures opened from the top of the parapet. Besides these there are three advanced batteries; one next the sea, which communicates with the body of the place by a sally-port, two to the S.E. communicating by a small sally-port under the east rampart. In the interior there are two raised batteries; one to the westward, built by the Sultaun, and another to the S.E., built by the English, and is elevated above that part of the S.E. face which has been repaired by them. Besides these, there is a high cavalier a little way to the north of the English battery, commanding the whole work. The area is filled with the ruins of houses, powder magazines, &c., and there are a great number of wells both within and without the fort, many of which are now frequented, and afford excellent water.

The west and south sides are washed by the sea, on the north the plain is nearly on a level with the beach, but the work standing upon a rock; all these three sides are considerably elevated, and particularly the S.E. part, where it was breached. The ground to the eastward forms a regular glacis, with dry ditch and bound hedge. The fort, independent of the ground it stands on, is very high, and the parapet is about ten or twelve feet above the rampart, and filled with loop-holes. The great height of the walls and rock serve to secure it against an escalade, and even against approaches, except to the eastward, where it is best fortified. The English erected their breaching battery upon a spot of rising ground, having a turn of the sea beach between them and the fort. Had the place been well defended, both their difficulties and their loss must have been very great in the assault.

During the Bednore government, when all these forts were built, Baekul must have been a place of considerable importance, and when Hyder conquered.
quered the Canara country it was the great depot of all the others. The inhabitants were then very numerous, and consisted of Mussulmauns, Rajapoots, Moplas, and a variety of Hindoo castes. The vestiges of a vast extent of buildings are yet visible; but of this once populous place there now remains but a small village.

On the 7th I left Baekul and proceeded inland about fourteen miles to Kunduddakamully, a high mountain, and one of my principal stations for carrying the triangles down the coast. The country is open about four miles to the eastward; the remainder is through an entire jungle, very billy and thinly inhabited, not more than three or four villages appearing the whole march, and these are all hidden away in the hollows, which are the only parts of the country that admit of cultivation. In these secreted situations the inhabitants are rather timid; but I met with every attention notwithstanding. They are an active race of people, and might be formidable enemies were they allowed to carry arms; but certainly military prowess can never have been a virtue among them, otherwise, with the natural strength of their country, they must have remained unconquered to this day.

These jungles abound with wild elephants and tigers, the latter are said to destroy many of the inhabitants, they not having the means of killing those animals.

On the 11th I returned toward the sea coast to Munjiumpuddy-betta, a march of about eight miles through a rugged and jungly country. Nothing remarkable. This is also one of my principal stations for carrying down the triangles.

On the 12th marched to Nelessaram, about nine miles distant. The road passes to the eastward of Hos-droog (which will be described hereafter), and continues through a sheet of paddy fields nearly the whole way, and at some distance from the beach. Crossed two rivers. On the following day continued our march to Cavai, over a beautiful flat the whole way, and a great part of it in cultivation. Cavai stands on an island formed by two branches of a river falling into the sea to the north and south. The distance across the island is not more than three-quarters of a mile; about half way across there are the remains of a fort of European construction. It has been intended for a square work with defences, and there is a canal communicating with the south river which has been intended to supply the ditch with water. The remains of this work are, a square tower bastion at the N.E. angle, a ruined house in the interior, and steps to the gateway on the east. On the south bank of the south river there is another square tower, with embrasures and loop-holes, similar to that on the island.

On the 14th went to Mount Dilli, about six miles south from Cavai, the road good and partly along the beach.

Mount Dilli is a high promontory, commanding an extensive prospect, and is a remarkable sea mark. The beach forms a projecting point to the S.W., and embraces the whole mountain. At the extremity of this point is a rocky hill, separated from the range by a ravine. On this rock there stands a square fort, with two bastions towards the west, and an enclosed high tower at the N.E. angle. The rock round from the N.W. to the S.W. is steep and washed by the surf at the bottom. The upper part forms a smooth glacis to the fort on all sides, and is well defended.

From the top of Mount Dilli peak, which is a principal station in this survey, Cannanore is distinctly seen, and also the Koorg mountains. The weather was extremely hazy when I was at this station, which prevented my see-
ing a great distance to the southward; not even Tellicherry could be distinguished. The flag-staff at Cannanore is the last point for the present; and between that and Mangalore the triangles are well disposed to become a basis for both inland and marine surveys.

On the 16th and 17th marched back to Hos-droog. This is a large fort standing on a rock, which is cut away on the south and east sides, with an intention to form a berm to the rampart, but it has never been reduced to a similar form with the fort. On the north side, where the ground is nearly on a level with the body of the place, a narrow ditch has been cut, from which is a gentle slope outward, making a regular glacis. The principal part of the work is nearly a square. At the S.E. angle a small square projects out to the east, being connected with the main rampart, through which is the door into this square, the east face of which has two small bastions, one at the S.E. and the other at the N.E. angle. In the centre of this square there is a high cavalier, commanding the whole interior of the fort. This small projected work forms a kind of citadel to the rest. On the north face is the gateway entering immediately into the area, and is covered by a square with two small bastions at the N.W. and N.E. angles; the door of that square entering on the west side. The work is defended by circular bastions at the corners and along the sides, amounting to fourteen, including the bastions at the gateway and fort on the S.E., and are as well arranged as the nature of a square work and circular defences would admit of. The height of the wall from the berm is upwards of eighteen feet, and that of the parapet above the rampart within between eight and nine feet. The rampart in most places is very high above the ground within, and is not more than ten feet in breadth. The bastions to the westward have two and three embrasures, but they are too confined for guns; those to the east and north have four and five. The whole of the parapet is loop-holed. About the middle of the south face there is a small sally-port, leading to the berm.

From the S.W. angle a narrow strip of land runs out, being a continuation of the same rock on which the fort is erected; and at the extremity of that strip a modern circular work has been begun, but not finished: it is about the distance of a musket-shot from the fort. That advanced work communicates with the main one by a small sally-port on the west side, close to the circular bastion at the corner.

The place may be taken by escalade on the south and west sides, and breached on the north side close on the right of the first bastion east from the gateway. The hound hedge affords cover, and the ditch at that place is scarcely excavated. The interior has contained a great number of houses, all now in ruins; the only building now remaining is an old thatched pagoda, which appears to have been built when this work was erected.

This is the last of the large forts to the southward of Mangalore, till we come to Cannanore; but there is a continuation of small ones down to Mount Dilli.

The arrangement which I have made of the triangles connecting Mangalore with Cannanore, and these with the mountains at the head of the ghauts, has been done with a view, not only to fix the latitudes and longitudes of the principal places, but to lay a foundation for a survey of the sea-coast, an object which I am persuaded will one day or other merit the most serious consideration of Government. It has been with this view also, that the secondary triangles have been carried to the northward as high as Koondapoor, from which place, down to Cannanore and Tellicherry, the shore seems to be one continued chain of fortified positions. Those to the northward of Mangalore
I have not seen, but the description given of the principal ones to the southward will convey some idea of their nature and extent. It may further be noticed, that these works are intended to defend the numerous inlets and harbours with which this coast abounds, and if I mistake not, the principal harbours for small craft, on the coast of Canara alone, amount to eighteen; that is to say, harbours for vessels drawing six and eight feet water and upwards.

What use these places might be to us at present may perhaps be a question, and certainly to occupy such a number would not only require a great force, but that force being divided into so many parts must be weakened, and those places must fall in succession; and this might probably be the case were they in possession of an enemy; but as that would cost us both time and men, it would perhaps be most advisable to destroy those works, saving some principal one to serve as a depot and rallying point, and have the coast protected by armed vessels of a construction suited to the harbours, with the addition of some inclosed redoubts at the entrance of those harbours; for if an enemy were to attempt a descent, it must be made in boats from some distance, as ships cannot anchor near the shore. This system would furnish a moving force which, under every circumstance, either of attack or defence, is the most efficient. For, whatever notion of security we may attach to fortifications, one thing is evident, that the force necessary to defend them is lost to every other purpose; and also that no force ought to be stationary, except in very limited and peculiar cases, such as protecting arsenals, which having to furnish military stores in various directions, cannot be otherwise than stationary; or in defence of particular positions for maintaining a line of communication.

If this or some other mode of defence be not adopted, whatever power has the harbour of Goa, and a superior fleet at sea, must command the whole of that coast; there is nothing to prevent a landing anywhere, and committing depredations, or even keeping possession of the country, should the inhabitants be friendly.

Having ascertained the positions of several points in the neighbourhood of Mangalore, and completed what I thought was necessary there, I left it on the 3d of February, and proceeded towards Moodabiderry, where I arrived on the 12th February.

Moodabiderry, or Morbiddery, as it is called by the English, is the remains of ancient grandeur when the Jyne caste, or the followers of Bhooda, were powerful in Canara, and it is now inhabited chiefly by that description of people, of whom there are many in different parts of this district: there are a great number of pagodas, all built of hewn stone, and the large one is a superb and stately edifice. The pillars that support it within are apparently turned, and elegantly carved, and the sculpture exhibits a great variety of small figures appertaining to their religion. The roof is also a display of very ingenious workmanship. The great pillar in front of the pagoda is superior to all the rest in taste.

To the eastward of the village there are a number of square pyramids which have composed a part of their religious edifices, but are now in ruins, and unconnected with the rest of the buildings. From the fragments that remain, this place appears to have been of great extent, and has been the residence of a rajah: a large thatched building on the south side of the pagoda is now called the rajah's house.

About a mile east of the large pagoda there is an old fort, of a square form, with seven circular bastions, and a fortified gateway on the west side. This work is surrounded by a ditch and a very low and narrow glacis. The fort is built.
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built of the same rough stone or composition as the rest, and is in good repair, excepting the N.W. bastion, at the angle, which is in ruins. It is commanded by ground to the south and west, the latter of which is covered with a tope and houses.

From Moodabiderry to Jemalabad on the 16th and 17th February.
The first part of the road from Moodabiderry to Yaenoor is pretty good, but the latter part runs over many ascents and descents, and crosses two small rivers. This distance is near twelve miles. From Yaenoor to Jemalabad, a distance of fourteen miles, the road is in general very good, with the exception of a few breaks, which might be readily repaired. On approaching Jema-
labad the country is covered with a thick jungle, and of course is little cul-
tivated.

Jemalabad is a fortified rock of extraordinary strength. It is a precipice on every side except to the N.E., and even there the road has been cut out of the solid rock. The ground on that side is a steep ascent from the pettah, and the work commences about half way up. The first gateway enters on the north side of a small advanced work, which is a continuation of the line to the eastward, but terminates on the N.W. at the rock. This advanced line defends the brow of the hill where the road ascends, as well as the ridge running out a short distance to the north.

A little further up the hill the second gateway enters, and runs across from the eastern line to the rock. This defends the space between the two gate-
ways, but the ground within that space is very uneven, and admits of a lodg-
ment.

Within the second gateway the road commences, and consists of a flight of very steep steps, covered by a parapet of rock formed by the excavation, and broad enough for a column of four deep to move: at the top of this flight of steps is the third gateway, which, in perpendicular height from the second, appears to be nearly one-third the perpendicular height of the whole hill from the pettah. This gateway defends the flight of steps, and may be rendered impregnable, for it commands a considerable space down along the steps. The present gateway is but ill constructed, the parapet of the wall being much too high, and crosses the road too obliquely.

On the summit of the rock are batteries for commanding the pettah on one side, and the great road to the south on the other; but shot from these high works could only plunge, and do little execution.

The chief and ultimate defence depends on the gateway at the head of the steps. The only use of the upper batteries to the N.E. would be to prevent a lodgment between the first and second gateways, and to annoy an enemy below.

On the top of the rock there are three magazines; two built with arched bomb-proofs, and the other cut out of the solid stone. There is water at the summit for about six months in the year: at present it is nearly dry, and cannot be supplied till the next rains; a circumstance necessary to be known. There are now upwards of sixty guns of different calibres, mostly unmounted, some very fine twelves and eighteen-pounders lying within the two first gateways. There is also a large quantity of powder, with some shot and lead.

This droog being stored with provisions, ammunition, and water, might be defended by a very small force against an army. It is true, the first gateway might be breached if a battery could be erected on the ridge of ground to the north of it, but that battery would be subject to dreadful execution from the guns at the top of the rock, if they could be brought to bear upon it, and
throw shells in place of shot. If that outwork should be carried, and a lodge-
ment made within it, the upper battery might still do injury, if the guns could
be depressed so low. Should even the second gateway be carried, the most
serious operations would be yet to commence. The third gateway being well
constructed, the rampart sufficiently high to check an attempt at escalade, and
well defended by musketry, with one gun to be served with grape; the exca-
vated passage of steps being filled with men, they might be destroyed without
being able to make resistance, for they could not present a front equal to that
which they would have to oppose, and the steps being so high from the great
declivity of the passage, that the files at the head of the column only could
make use of their fire; even shot rolled over the parapet would make dread-
ful havoc in bounding down the flight of steps.

What object this may answer at present I know not, unless, by having a
small garrison there, it is prevented being possessed, and becoming the rallying
point in case of defection among the inhabitants. Tipoo fortified it, and in-
tended that place to be the seat of his government below the ghauts. It is
true it commands the great road leading down the Kurkadikul pass to Mooda-
biddery and Mangalore, but it is in the midst of a jungle, and only calculated
for the sent of a plundering polygar. Should there be a rebellion in Canara,
the inhabitants would rely on the natural strength of the country, and take
shelter in their recesses and concealed habitations, which a traveller in the
midst of peace finds a difficulty in exploring.

The Sultaun kept a considerable military force here, and obliged a number
of inhabitants to quit the country, and reside in the pettah which was built for
that purpose: but the remains of that pettah are now but a few shops, forming
a small bazar to supply a company of sepoys at present stationed there. It
has been very large, and fortified all round. During the mutiny of the garrison
in 1800, Colonel Sertorius, who commanded the troops sent to reduce the
place, got possession of the pettah, and erected a battery of two guns on a
rising ground on the east part of the pettah wall; but these would have been
useless had the mutineers held out, and a blockade only could have afforded
the means of reducing them. As a military post, in point of defence, it is
certainly a strong one, and should the road down the Kurkadikul pass become
a military one, this droog may be useful as commanding it.

From Jemalabad to the foot of the pass the road is very good, and the dis-
tance about nine miles N.E. There are only two villages on the way, one near
the pass, and fine open ground, suited for encampments, with good water
near it.

On the 18th February I ascended the ghaut, and the following are the re-
marks made during the time:

Twenty minutes after leaving the ground, the steep part begins:—continues
pretty steep and stony:—30' a steep and stony place, very short, but rocky:—
35' easy ascent:—soon level—easily repaired:—good. 40' easy ascent:—a
little stony:—short descent:—level:—difficult:—level and good again:—short
descent:—gentle ascent again:—continues good:—gentle descent:—level.—
A little broken.—Gentle ascent again and road very good.—One hour, another
small hollow:—a little stony:—across the hollow very rocky, but easily re-
paired:—short ascent:—rather steep, but not difficult:—short ascents and
descents:—the road good:—thick forest all the way:—road continues good:
1½ hour, stony part, but short.—Ascent and a little stony.—Rocky and broken,
but easily repaired.—Continues rocky and broken, but not difficult:—con-
tinues to rise gradually.—More rocky.—Thick and lofty forest. 1½ hour, road
good.—Rocky ascent again, but easily repaired:—rather steep and rocky.—
More steep and rocky, but reparable. 1¼ hour, very rocky but not steep:—
rocky ascent continues, but not difficult. 1 h. 50 m., steep hollow and stony,
but not difficult:—gradual ascent again.—Less rocky but more steep: still
more so, with stone and rock, but easily repaired.—The rocks apparently of a
soft nature. 2 h. 10 m., a very steep rocky place:—less so, but yet steep and
rocky:—gentle ascent again.—Pretty steep and stony again. 2 h. 50 m., a very
steep and rocky place, surface easily smoothed.—The mountainous precipice
close on the right, made up of strata.—Rocky, but less steep.—Gentle wind-
ing ascent.—Road very good. 3 h. 15 m., a rocky place, reparable by blowing
the rocks.—The road cut out of the side of the precipice.—Very rocky, but a
gentle ascent.—Road cut out in steps for a small distance.—Narrow, and still
cut out of the rock. 3½ hours, at the head of the pass.

From noting the time, and allowing about one mile and a quarter per hour,
it will not be difficult to form an idea with respect to this ghat. The most
troublesome place is where the road is cut out of the rock on the side of the
mountain, it there wants breadth and security. We met a great number of
loaded bullocks going down. My baggage was carried by coolies with light
loads, as I expected much more difficulty than I met with.

From the head of the pass down to Sultaun-pett, where I encamped, the dis-
tance is about a mile and a half, down the declivity of a mountain to the east-
ward. This village lies near the foot of Balaroyn-droog, on the N.E., and is
on the great road to Woostara.

Balaroyn-droog is a stupendous fortified mountain, 5,000 feet in perpen-
dicular height above the sea. The road to the top is long, and of easy ascent.
It commences from the foot of the valley lying south of the village of Sultaun-
pett, and on the north side of the droog. The first part winds to the S.W. and
S. till it comes to the steep side of the mountain, when it turns to the left, and
crossing a ravine, it enters the first part of the fortification, where there is a
redoubt commanding the cap of the hill on which it stands, and overlooks a
deep valley on the east. From this redoubt the line begins, and continues on
the left of the road in a S.E. direction for about a quarter of a mile to another
gateway and redoubt. From thence the line takes an easterly course, heading
the valley just mentioned, and winds round another mountain, steep and
abrupt, to the eastward.

The road continues on a gentle ascent from the second gateway, and turn-
ing to the westward, to the summit of a still higher mountain than the rest,
where there is a square mud fort, with three circular bastions at the east,
north, and south angles. This fort completely commands every other part,
but having no ditch, it may be either scaled or breached from a part of the
same ridge, but lower, lying to the S.E. From the N.W. side a line com-
mences, and is continued from thence along the brow of the lower part of
the hill, forming a precipice to the north and east, and joins the fort again on
the east angle. Within this area, and considerably below the fort, on the
N.E. side, is a small redoubt for guns, and in the hollow to the left between
the fort and this redoubt, are several buildings, such as magazines for powder
and other stores.

These works have been built during the early part of the Bednore govern-
ment, and when Hyder Alli took Bednore, the Ranees made her escape, and
fled to this droog, but was pursued and taken.

Having remained on the top of this droog to the 4th March, for the purpese
of fixing the meridian of the station in the south bastion of the upper fort, I
marched
marched on the 5th, and reached Woostara on the 6th. The first day’s march was to Saurgoad, a small village with a bazar, about twelve miles easterly from Sultaun-pett. The road over mountainous ground, the first six miles being down a ghaut, at the foot of which is the gateway bounding the districts of Balaroyn-droog and Woostara. The second day’s march not much better for about eight miles, when the country opens, and continues so to Woostara, the whole distance from Saurgoad being about twelve miles.

Woostara is an old fort on the side of some rising ground, commanded on every side, and particularly on that to which it inclines. From the ground where I encamped the whole interior of the work is seen. That ground is on the south side, about half a mile distant.

This work is also said to have been built during the government of Bednore, in which district it lies, and the same district extends about three miles more southerly. During the flourishing period of the Bednore government the countries of Canara and Soondah were all included in it. These districts were subject to the roys of Beejenagur till the year 1542, when this government was founded by Chinapa Gower, to whom it was made over by Sadaschun Roy.

From Woostara to Bailoor is the great road, through an open and delightful country. Bailoor is remarkable for its pagodas, and the most exquisite workmanship in the sculpture of the different figures. It is said to be the most ancient pagoda in Mysore.