

PROCEEDINGS
OF THE
ROYAL GEOGRAPHICAL SOCIETY
AND MONTHLY RECORD OF GEOGRAPHY.

The Highway from the Indus to Candahar.

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(A Lecture delivered at the Evening Meeting, June 14th, 1880.)

Map, p. 592.

SIR RICHARD TEMPLE spoke as follows :—

I am supposed at this moment to begin reading to you a paper on the Highway from the Indus to Candahar; but I am only to give you orally what I hope will be found to be a popular explanation of the maps, and of the pictorial representations which are hung up on the screen behind me and before you. The large map in the corner is the standard map of Afghanistan and Central Asia, with which all members of this Society are familiar. The map immediately below it is a new map which has been prepared specially by the draughtsman of the Society, Mr. Turner, for this occasion; and in several respects it contains geographical particulars which, although they have been exhibited in India, have never been exhibited before any audience in England.* The pictorial illustrations have been prepared by my brother, Lieutenant George Temple of the Navy, a gentleman who has read papers with similar illustrations in this very lecture room. These illustrations have been prepared from my own original sketches and under my own supervision, and I can guarantee their correctness. The region on which I am about to dilate briefly is, I do not disguise from you, fraught with much political interest; but politics constitute a theme upon which I am absolutely precluded from entering at the present moment. But although all of you are, ladies and gentlemen, geographers first, I dare say you are sympathetic with all the human interest which attaches to

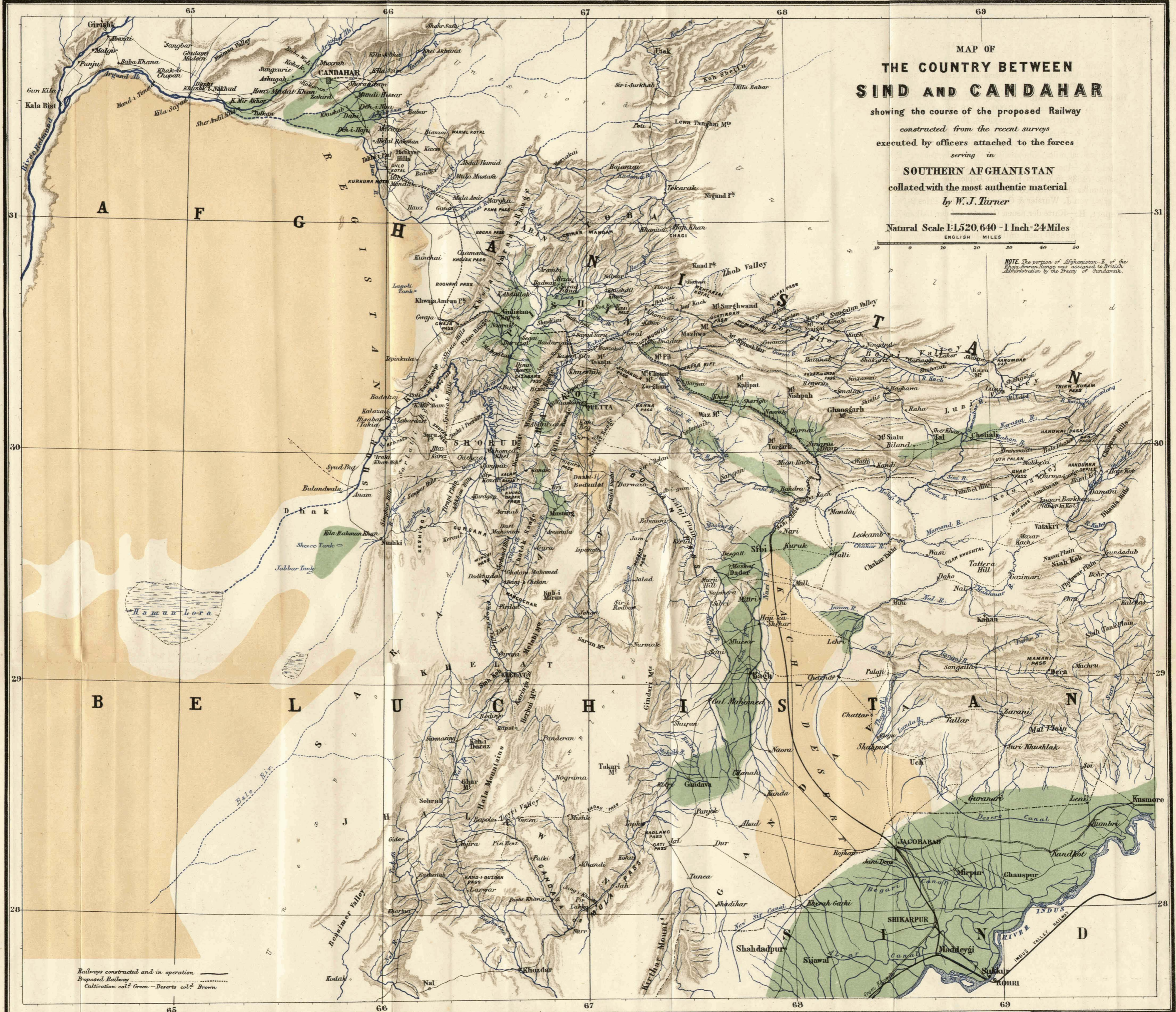
* The map accompanying this number at p. 592 is a reduction, with additions from recent surveys, of the map alluded to by Sir Richard, and the engravings (by Lieut G. T. Temple) are also reductions of the pictorial illustrations exhibited by the lecturer.—Ed.

MAP OF
**THE COUNTRY BETWEEN
 SIND AND CANDAHAR**

showing the course of the proposed Railway
 constructed from the recent surveys
 executed by officers attached to the forces
 serving in
SOUTHERN AFGHANISTAN
 collated with the most authentic material
 by **W. J. Turner**

Natural Scale 1:520,640 - 1 Inch = 24 Miles
 ENGLISH MILES
 0 10 20 30 40 50

NOTE: The portion of Afghanistan E. of the
 Khyber Pass was assigned to British
 Administration by the Treaty of Gandamak.



Railways constructed and in operation ———
 Proposed Railway - - - - -
 Cultivation col^d Green - Deserts col^d Brown

the scenes illustrated on this screen. These are scenes where British soldiers and British people have not only bled, suffered, and endured, but are still bleeding, still suffering, still enduring. This is a region which many men contemplate with pride, considering the honour they have already won, and, with hope, regarding the distinction which they may still acquire; but it is also a region which many English parents meditate upon with anxiety, on account of their gallant sons or relatives who are serving their country. It is a region, also, to which many weeping widows and bereaved relations will look back with a life-long regret. Therefore it is a region fraught with human interest—an interest which will be ever cherished by members of this Society.

Now, ladies and gentlemen, I must first ask you to bear in mind generally the region to which our expedition relates. If you will kindly look at the general map, on your extreme left you will see the country of Afghanistan, the valley of the Indus, Kurrachee (Karáchi), the Punjab, Sukkur, Candahar, Herat, Ghuzni, and Kabul; and up at the top you will see the regions of Central Asia. Now, then, I presume you know pretty well where you are.

I shall ask you next to look at the map immediately below on your left, which has been prepared for this occasion. This map relates to the country between the Indus and the Argandab; that is to say, between the town of Sukkur on the Indus and the town of Candahar on the Argandab, a distance of over 400 miles. It is divided for the purposes of this exposition into four divisions, to which I must ask your particular attention.

First, there is the country below the hills; secondly, the country within the hills; thirdly, the valley of Pishin and the Khoja Amran range, which is the boundary between the British territory and Southern Afghanistan; fourthly, the country between the Khoja Amran range and Candahar. Now, to each of these divisions I shall have to ask your attention separately, and in detail.

First, then, as regards the country below the hills. Now, let us begin with the position of Sukkur on the Indus. Near Sukkur there runs up a low range of hills from the south-east towards Sukkur. That range is a remarkable geographical feature, for it determines the course of the Lower Indus. It settles the question whether the Indus shall run through Sind, converting it into a lesser Egypt, or whether the Indus shall run towards the east to the deserts that skirt the western parts of India. Now, the Indus passes by the town of Kusmore, a little above Sukkur. From Kusmore down to Sukkur there is a long line of embankments which constitute a monument of British enterprise and science, and which form one of the largest series of embankments in the world, Holland not excepted. In the neighbourhood of these embankments, that is, under the lee of the protective line, are canals, villages and towns, railway lines, military roads, marts of trade, all nestling in comparative

security. But sometimes the Indus breaks through those embankments. The year before last it swept the country you see coloured green on the map, and placed it all under water. Traffic for the time was suspended, the roads were submerged, and the whole country was the scene of temporary devastation. Now, these are dangers from which no human skill or foresight can guard us. We hope to make these embankments more safe from time to time; but the Indus constitutes a source of permanent danger. Now, through this piece of country that is coloured green on the map, there runs the line of the new railway from a point near Sukkur to Candahar, and thus I bring you the first 50 miles of your journey of 400 miles and upwards towards Candahar.



FIG. 1.—SUKKUR, ON THE INDUS.

Before going further, I shall advert to the first of the pictures high up on the screen, which affords a view of Sukkur from Rohri on the left bank of the Indus. Between Rohri and Sukkur, there is a rocky island on which a fortress was built by preceding dynasties, which is called the fortress of Bukkur. Our view is looking from Rohri towards Sukkur. In the background you will see the town of Sukkur, on the other side of the Indus, on low hills. Now, between my point of view and Sukkur there is to be carried the bridge of the Indus, by one mighty span from Rohri to Bukkur island, on the suspension principle. Between Bukkur and Sukkur there will be two or three spans. The difficulty is that between my point of view and Bukkur the river is so deep and so rapid that no pier could be constructed, and there is nothing for it but to cross this branch of the river with one span of 350 feet on the suspension principle. On the banks of the river at Sukkur you will see in the illustration a number of boats in the Indus. That will be considered the commercial basis of Candahar. It is also a military base. It was from there that General Stewart's forces, and all the materials of war and all those thousands of camels which you have heard of, were despatched. You will see also, on the river, steamers joining one bank

with the other, until the bridge shall be built. You will see two sets of pillars. Those are the pillars of the electric telegraph, which is carried right across the Indus.

I thus convey you in imagination over the first 50 miles, across the green strip of country. It is entirely cultivated, or else covered with vegetation. After passing this green, you will bid farewell to vegetation for many a long mile.

I now enter upon the second division, namely, the country below the hills, and conduct you into the desert. The desert you will find coloured light brown in the map. You will perceive that on the left hand of the desert there are green strips which represent cultivation, which is carried on by irrigation by those streams which run from the hills. You will there remark a particular feature in those streams, that they have sources and courses but have no mouths, because as the irrigation goes on, they are merged in numerous streams and water-courses. And that is the remarkable feature of Central Asia: there are scores of rivers without mouths. Now the point is, that all these green strips were liable to such floods that we could not possibly carry a temporary railway to Candahar through these strips of country. We were obliged to carry the railway through the very midst of the desert, for there alone we could get ground suitable for the construction of the work. But this ground had a particular disadvantage in that it was waterless. It is light friable soil, the best galloping ground for horsemen that I have ever seen. You can imagine the difficulty we had in getting natives to face this desert. They declared they would die of thirst; but we sunk down tanks in the desert, and established a service of water trains by the railway as it progressed, in order to carry the water supply to the people at the works. The people numbered 3500, besides 1500 animals, and water had to be carried day after day, sometimes 50 or 60 miles, in order to supply this large number of mouths. Nevertheless the railway was carried on through this desert, at the average rate of two miles a day; sometimes we attained the rate of $2\frac{1}{2}$ miles a day, and one day we got three miles. The construction consisted of two feet of earthway; besides that there was the laying down of the sleepers and the fastening down of the rails. These materials were gathered from great distances in all quarters of India, and I need not detain you on that topic. It has been considered the most rapid piece of work that has been done by any nation—at least out of America; but although I had the general supervision and direction of the works, I make no claim for credit personally. I would rather give the credit to Colonel Lindsay, the engineer-in-chief, and all the staff that worked under me. So I bring you through the desert approaching to Sibi.

I then ask your attention to the picture on the screen, illustrating the neighbourhood of Sibi. You will there see the low hills of Beluchistan beyond Sibi: you will see the hill of Kalipat in the extreme

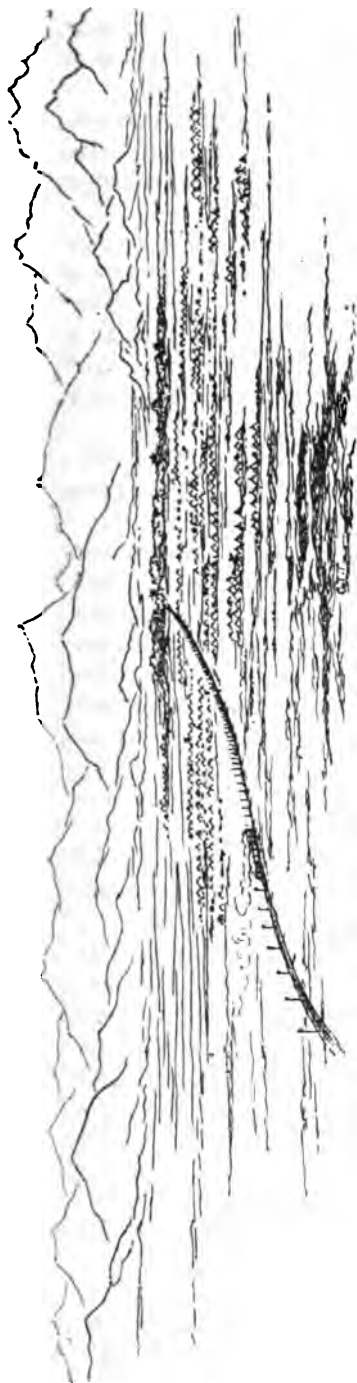


FIG. 2.—APPROACH TO SIDI: THE KACHI DESERT AND RAILWAY.

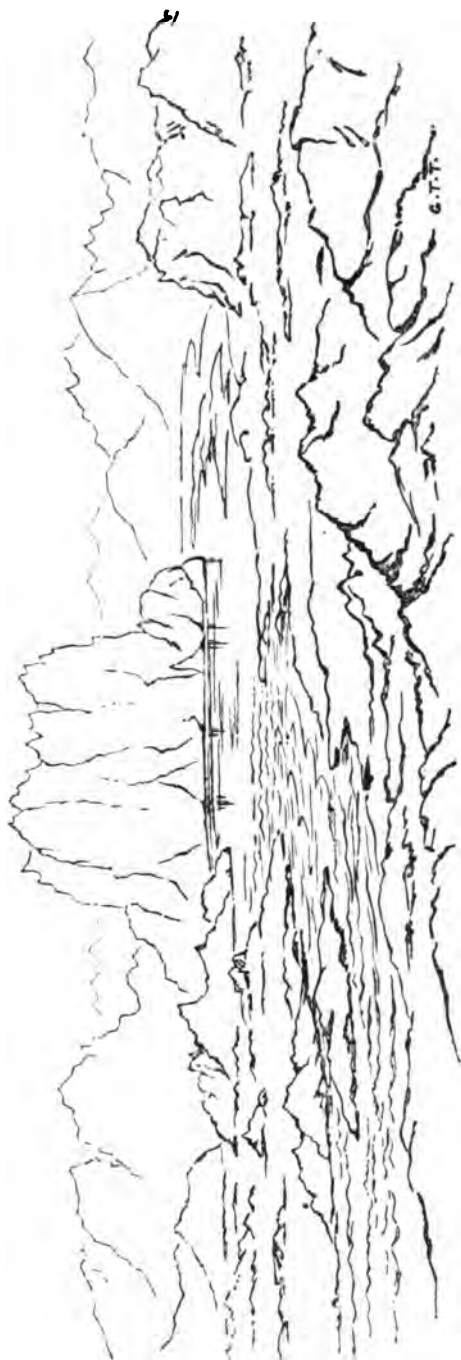


FIG. 3.—THE NARI GORGE.

distance; you will perceive, also, a long line of dark trees, the groves of Sibi, the only green trees to be found for many miles around, and on this side of the green trees you will see something that is meant to represent the encampment where the Bombay troops were encamped, which have since relieved General Stewart's forces in Candahar. In the foreground of the picture you will observe the line of the railway and the telegraph posts, and the immense expanse of desert.

We have now got through the desert 90 miles in addition to the 50 miles first mentioned, and thus I have brought you 140 miles on the journey which I am asking you to make with me to Candahar. Thus far, we have passed through regions that are familiarly known to many distinguished members of this Society—to such members as Sir Barrow Ellis and Sir William Merewether, who are no doubt present here this evening.

We have been, so far as the green part of the map is concerned, within the British territory: after that, we enter on the brown part of the map, and are then in the territory of Khelat.

We are now to enter upon part of the territory that was assigned to us by the recent treaty of Gundamuk—called the southern assigned districts of Afghanistan. We are also about to plunge straight into the hills, from which you will not escape for a good many miles to come, until I have to direct your attention to the great desert of South-western Afghanistan. So, now, you must make up your minds to quit the plains of India, and to be surrounded by hills for a considerable part of your journey.

As far as Sibi the railway line is marked continuously black, which indicates a complete and open rail—open at least, if not completed. After that you will find the railway line marked by a dotted line of black on the map, which indicates a railway that is under construction; and this railway, you will perceive, follows the line of the Nari river, which passes through a gorge called the Nari Gorge. After that it passes through one or two lines of low hills, and enters upon the Harnai valley at the foot of a mountain called Kalipat. After that it passes through a long cultivated valley until it crosses Chapar mountain; then the railway passes a rift or chasm in the great limestone geological formation. The railway makes use of the river to pass through this otherwise impassable limestone mountain. After that it enters on the upper valley, and so it gets to Gwál, which lies upon the edge of the elevated plateau of Pishin and the flank of that range of mountains which separate Pishin from the lower mountains, and constitute the great natural defence of the plateau.

I have thus brought you for the moment as far as Gwál and Pishin, and I must ask your attention to three pictorial illustrations of this part of the route. You will first note the picture of the Nari Gorge. You will see the low hills we have to pass in the middle distance, a light friable

kind of rocks in all sorts of fantastic shapes, which are geologically insignificant as compared to the geological formations to which I shall presently call your attention. In the meantime you will understand that these lower hills can be easily blasted with dynamite. They were so being blasted some months ago, when I saw them, and thus the railway can be rapidly constructed.

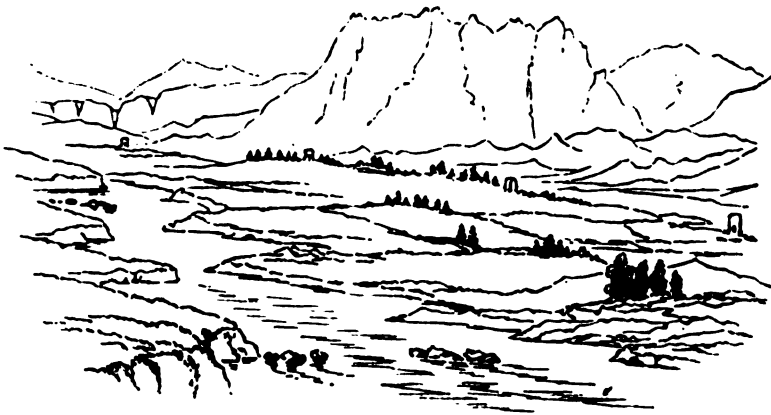


FIG. 4.—THE HARNAI VALLEY; KALIPAT MOUNTAIN IN THE DISTANCE.

The next view of the Harnai valley is of interest. In the background you have the mountain of Kalipat. Our railway has now attained the height of 3000 feet above the level of the sea, ascending gradually from Sibi which is reckoned at 700 feet. In the Harnai valley, then, we have attained the height of 3000 feet, and this Kalipat mountain is 11,000 or 12,000 feet. Thus our picture of Kalipat shows some 7000 or 8000 feet of sheer precipitous ascent overhanging this very valley. It is a magnificent limestone formation. Then in the middle distance you will observe a line of towers. They are the defences of the villagers in the valleys against the marauders of the tribes from the hills. These towers are refuges into which the wretched husbandman and his cattle may escape for the moment, while a storm of devastation and plunder sweeps over his fields. You will observe that the towers face the hills whence the marauders come, and behind the towers are the fertile fields. In the extreme left of the picture you will observe from the heights of Kalipat a slope of limestone formations, and in the left of the picture you will find rifts or chasms, and to these chasms I shall have immediately to conduct you.

For a better understanding of them, I must ask you to look at the next picture, which represents what we call the Chapar Rift. We take full advantage of that rift to pass the railway through it. There you see precipitous rocks overhanging the rushing stream, and on the left you will see ledges of rocks over which we shall conduct the railway.

We shall have to construct a viaduct with piers of 100 feet high, in order to approach those ledges. But this is not a difficult work; the foundations are excellent, and we hope to master the line of the railway within this rift or chasm. The point at which my view is taken is narrow, like the neck of a bottle, but after that the railway gets into the valley

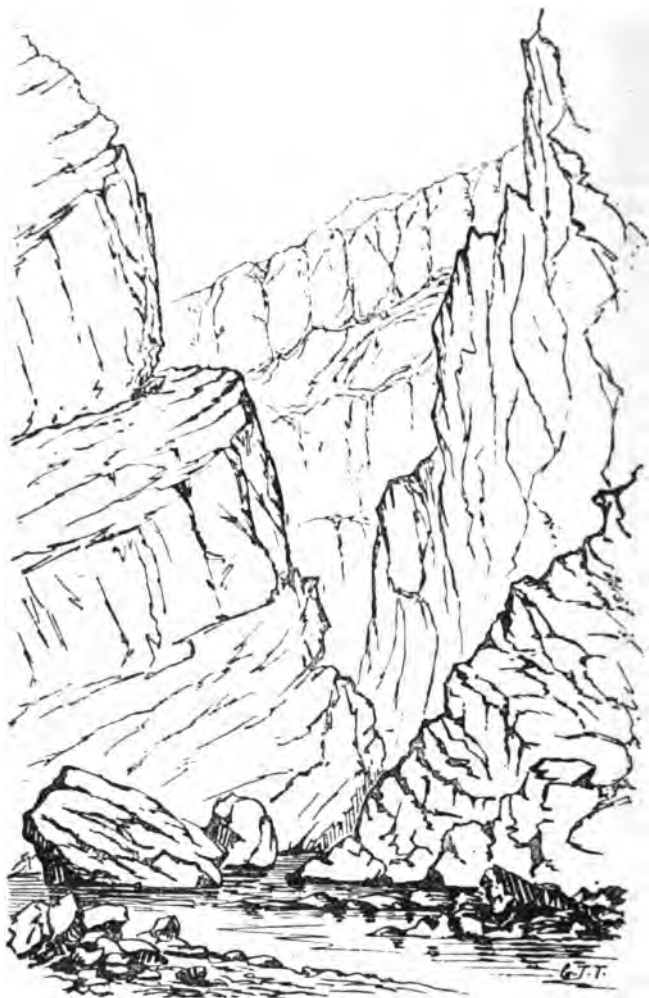


FIG. 5.—THE CHAPAR RIFT.

opening like a bottle, and follows the course of the stream, and in that way we make use of the stream for the railway; and so, almost imperceptibly, we ascend up to Gwál, which is 5500 feet above the sea (about 2000 feet higher than the Chapar Rift, which may be reckoned at 3500 feet). This incline, with the help of the river, will be effected



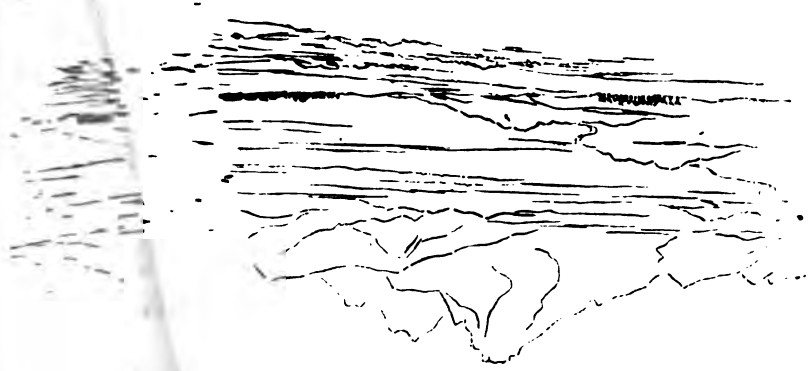


FIG. 7.—PANORAMIC VIEW OF QUETTA.

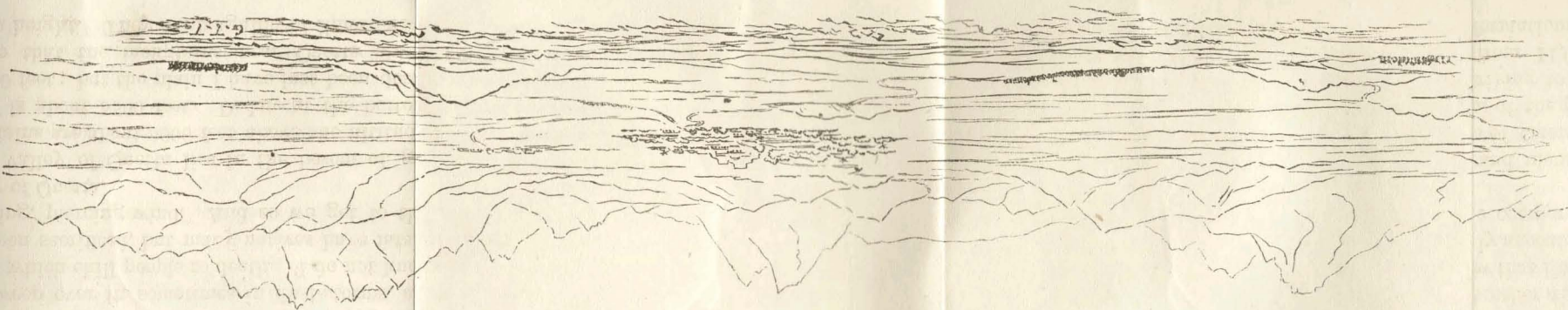


FIG. 6.—HOLIAN PASS.



with comparative ease, considering the railway inclines in other parts of India or of the world.

I have thus advanced you another 100 miles of your journey towards Candahar, and I must now ask you to revert to Sibi. From Sibi you will see there runs on the map a direct line of military road to Dadar, and from there you enter upon the famous Bolan Pass—a pass by which the British invading armies have always passed from India to Afghanistan.

I will now ask you to follow me up the Bolan Pass to a place where you will see hills marked on the map somewhat darker than the rest.

Then you should look at the picture of this place. In the background you see the high mountains which flank the plateau of Quetta. In the centre you see the line through which the military and commercial traffic has to pass, and in the foreground you see the Bolan river running with branchlets and rivulets under the rocky formations. These rocky formations are geologically insignificant, but the colour of the water is admired by every educated person who sees it. It is the most beautiful mixture of azure and emerald. The stream goes careering over the shingle and sand, and that used to constitute one of the greatest difficulties of the pass. It was in the crossing and recrossing of this stream that everybody got so wet in the cold weather, and constant failure of health and strength was occasioned. Through the steadiness and industry of the Bombay troops under the direction of General Phayre, who is a brother of Sir Arthur Phayre, a distinguished member of this Society, we managed in a very short time to make a good military road, instead of the steep shingly inclines over which the guns and the military stores used to be laboriously dragged. The pass is now permeated by a road over which officers drive their dog-carts, and over which, when I left India, we were arranging to draw vehicles by horses at five miles an hour. In that way we get to the mountains which are exhibited on the background of the Bolan Pass, and so we reach the desolate plain of Beluchistan.

You will see this plain (called Dasht-i-Bedaulat or desolate plain) coloured light brown on the map. Now this is a plain of which travellers should beware during the winter season, for the most withering blasts sweep over it, sometimes in dust-storms, at other times in snow-storms, which chill people to death. I do not know that European lives have been sacrificed, but many natives have fatally succumbed to this benumbing, piercing wind. And so we get to the comparatively happy valley of Quetta.

Now the valley of Quetta lies in the bosom of grand mountains. These mountains are about 6000 feet above the altitude of Quetta, and Quetta itself is about 5500 feet. Dadar, at the bottom of the pass, is less than 1000 feet; but the plain I have just been describing to you is 6000 feet, so that the mountains near Quetta are from 11,000 to 12,000 feet in height. They are magnificent limestone formations.

Now this you will find illustrated on our screen by the panoramic view of Quetta. On the right hand of the picture you will see the mountain of Mûrdâr. The name signifies "the dead man's mountain," and the natives say that the reason why they call it so is because any man who tried to ascend it would be dead before he got to the top. In the distance to the right you will perceive the mountain of Zarghm, which is remarkable for its forests of juniper, but in this clear atmosphere, in the evening light, so strong is the effulgence of the setting sun that the mountain looks at sunset like one mass of rose-colour. Then midway in the picture you see Takatu mountain, which separates the valley of Quetta from the valley of Pishin. The spurs of Takatu stretch to the left, and through a long gap in the Takatu spurs you see in the distance a line of blue-grey mountains, which form the Khoja Amran range, and between the spurs of Quetta and these blue mountains there lies the valley of Pishin. Further to the left you will see the mountain of Chiltan, or "forty persons," so called from a Mahommedan legend about forty saints, with which I need not detain you. In the middle distance you will see the town and mud fort of Quetta. In front of that you will see the houses and gardens that constitute the civil and military station of Quetta itself, built for the immediate accommodation of our troops; and further to the right you will observe the new British bazar or town. In the foreground you perceive the road leading from the Bolan Pass towards Quetta, and joining the road near Quetta you will see a road that comes from the Khelat country. I am sure that no view I could present, and no colours that I could depict, could give you any idea of the real splendour of this scene. These mountains, 12,000 feet high, with their magnificent rocks, at sunrise are lighted up with fire, and at sunset they blush with rose-coloured splendour. Down in the valleys, near the little groves, are now carried on British amusements. There are cricket-matches and lawn-tennis and Badminton, and other games, and on these scenes there look down the magnificent mountains. I suppose there are no more beautiful play-grounds in the world than those play-grounds of Quetta.

We have now got over another 120 miles of our journey, and I must ask you to look again at where I last conducted you on the map near Gwâl. We have now fairly entered the Pishin valley. From the town of Quetta there runs an indication of a military road, which road goes towards the well-known Gazaband Pass, where Generals Stewart and Biddulph passed with their troops towards Pishin. Now that the military road runs into the Pishin valley, and the railway line from Gwâl runs also into the Pishin valley, both the military road and the railway will cross the Lora river, which is indicated to you by the map as running through the valley of Pishin. Looking across the valley of Pishin, you see the Khoja Amran range, which is the real boundary of Afghanistan. This range takes its name from the tomb of a saint,

Khoja Amran, whose tomb is at the top of the highest peak, but in reality this range is better known to Europeans from the two great military passes that exist within it: one the Khojak Pass and the other the Gwaja Pass, which latter, owing to the construction of the railway, is in the future more likely to become celebrated.



FIG. 8.—PISHIN VALLEY: KHOJA AMRAN RANGE IN THE DISTANCE.

I must ask you now to look at the next pictorial illustration on our screen. In the background you will see the Khoja Amran mountains, stretching like an old grey wall. At the foot of the hills you will see an indication of a well-known town, Kala Abdullah, and above there is the Khojak Pass. In the centre of the range you will see a peak which is called the Khwaja Amran Peak, and towards the left you will see the town of Gulistan Karez, which is a lovely place, with water-courses, canals, and fruit-gardens, and above that you will see where the Gwaja Pass is. In the middle distance you will see the partially cultivated plain of Pishin, and you will see the Lora river; and this view is taken from where the railway viaduct is to be constructed over the river.

Before I leave Pishin, I may detain you for one or two moments by explaining to you why we take the railway by the Nari river, instead of the old route of the Bolan Pass. Now, a railway by the Bolan route would have been vastly better than no railway at all, and would have been a great national advantage had there been no better route obtainable; but the Bolan route was open to certain objections, as there were very sharp curves, then stiff gradients, and then the great liability to floods during the storms of summer; then there was a foreign jurisdiction, that of the Khan of Khelat; but the main point was this, whatever might be the expenditure devoted to it, we could not make that railway safe at all seasons, and also there was a very rigorous climate in winter, as well as a great want of food supplies all along the line. On the other hand, by the route of the railway I have described to you, by the Nari river, we had much better curves and much easier gradients; we had complete freedom from the floods of summer—that is to say, we are able to take

the railway beyond the reach of the floods; we had a much less rigorous climate in winter, and we had supplies along the line, and it will pass entirely through the assigned districts under British administration. Above all, we found by the help of the river a most excellent engineering line. The difficulty with lines of this kind is that you have to surmount the vast mountain wall which forms the flank of the elevated plateau of Beluchistan, and constitutes the boundary between Beluchistan and India. From some volcanic forces in geological periods, there have been great chasms and rents formed in this wall. Rivers rise in the plateau, which pass through these rents and chasms into the lower valleys. Our engineers took advantage of these rents and chasms, and of these ancient geological circumstances, and that is actually how we have obtained this line. From my personal knowledge of the line, I can assure you that you ascend minute by minute, and you are hardly conscious that you are ascending at all.

In confirmation of this fact I may mention that last November, I, in company with others, marched over a parallel route at a rate of 45 miles a day (or 90 miles in two days), and during that time we were scarcely conscious that we were ascending at all. Nevertheless on those two days we ascended 5000 feet.

Now, ladies and gentlemen, I have conducted you through the lower range of hills on to the valley of Pishin, and to the Khoja Amran range beyond. I have also asked you to remember that the railway is not, to ascend the Khoja Amran range by the Khojak Pass, which is the present military road, but is to ascend by the Gwaja Pass further south. I must, however, ask you to ascend with me the Khojak Pass, 8000 feet above sea-level, and that is the highest point to which I shall have to conduct you this evening. Having got in this way to the summit of the Khojak Pass, I will explain to you that the geological features of the range are comparatively insignificant, with the exception of the Gwaja Pass, where grand granite formations render the scenery very fine; in the Khojak Pass, where we now are, the scenery is poor.

I must now ask your notice to the picture on our screen which represents the view from the Khojak summit looking towards Southern Afghanistan. In the distance you will perceive the low hills of Candahar. In the extreme distance you will also see the hills of Northern or Upper Afghanistan. On the left in the distance you will perceive the desert of Southern Afghanistan, which desert, you will find, is marked with a large brown patch upon the map. In my pictorial illustration you will see it marked by a large dust-storm which is coming up in vast columns. I myself saw that dust-storm arise. It came from 60 miles off, and I saw it rush on with remarkable rapidity. We knew it was coming quick, so we tethered our horses under shelter in the lee of the summit, and we ourselves stood on the summit itself, in order to face the storm.

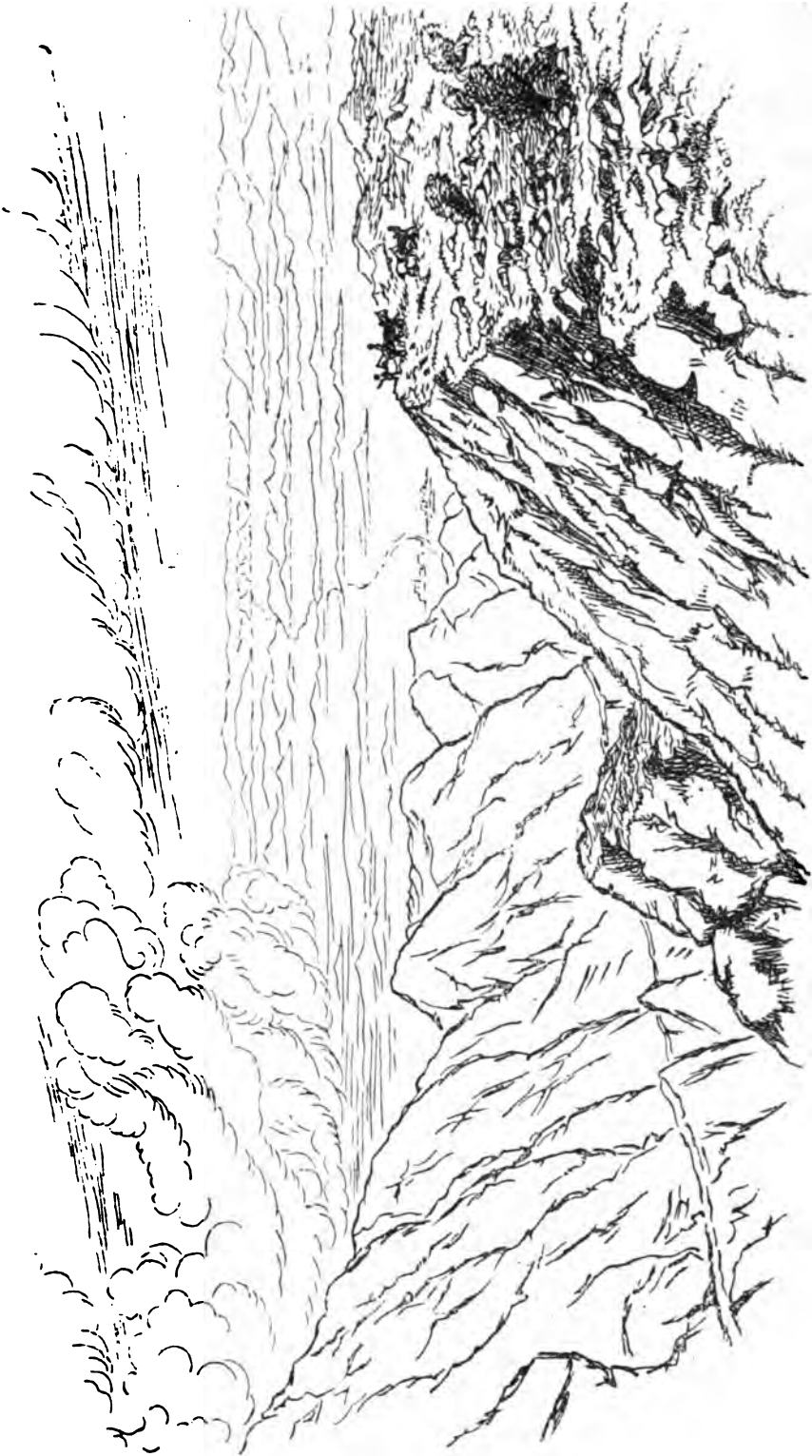


FIG. 9.—VIEW FROM THE SUMMIT OF THE KHUJAK PASS.

It was as much as we could do to stand. Although we were 3000 feet above that desert the dust blew furiously in our faces, and we could scarcely stand against it. The frequent occurrence of these dust-storms constitutes a noteworthy feature in that desert. In the middle distance you will perceive the military road running towards Candahar, on which line actions have been recently fought, and down at the foot of the range you will see the military post of Chaman, and near that you will see the spot which represents the spring where the only water and the only green thing can be got in the locality. In the foreground you will see the place called the "Gun Slip." This name "Gun Slip" means the operation whereby Stewart's guns were slipped down the precipitous hill-side. The guns had to be passed down by ropes, and the horses were led down. You may have seen this operation depicted in the 'Illustrated London News' of the time. Subsequently our officers have made a good zigzag road down the hill-side, which road you will see represented on the left of the picture.

Such, then, is this remarkable view. Picturesque it may not be, but it is a wonderful view, because it is the point from which so many heroes and statesmen of the first Afghan war must have looked on Afghanistan, which was to them the promised land—such statesmen as Keene, Macnaghten, and your excellent Vice-President here, Sir Henry Rawlinson, who is now present, and is sitting on my left. Imagine the hope they must have felt when they looked on Afghanistan from this place. And this is the point of view from which the heroes of the last Afghan war must have first gazed at Afghanistan; not only Sir Donald Stewart but Sir Michael Biddulph, who has lectured to you from this very table.

Thus we have got another 60 miles upon our journey, and there only remain the last 90 miles of the run to get to the winning post. You will observe from the map that the railway is to proceed from the Gwaja Pass at the south extremity of the Khoja Amran range, and to enter on the southern plains of Afghanistan. It will first take a sweep towards the right, or east, in order to avoid the desert. Then it has to run on the right bank of the Dori river, crossing several tributary streams on its way. It passes by the Mel Pass, where the Afghan Governor of Candahar offered some resistance to the advance of Stewart's forces. After that it passes by the village of Khushab, and so runs on to Candahar. Now, you may ask me why we take the railway on the right bank of the Dori river, when we might have taken it along the left bank, and thus have avoided five tributary streams. To that I have a specific answer, and that is—if you went on the left bank of the Dori river you would be much too near the desert. The drifting sands of the desert are very dangerous, and offer difficulties to the engineers; and you will observe that the desert is one of the dominating features in this part of the country.

It is this desert which mainly contributes to the political importance of the district of Candahar. Everybody who comes and goes either from India towards Central Asia, or from Central Asia towards India, must pass along the elbow of that desert, and rounding its corner must go by Candahar. That is one of the reasons why Candahar has always been deemed so important by all the great commanders and politicians in Asia, from the earliest ages to the present.

Now, then, I arrive at the last illustration of my pictorial series on our screen. This illustration shows the first view the traveller gets as he approaches Candahar. You will see in the extreme distance the hills on the other side of the Argandab river, which are spurs of the Siâh Kôh range. In the middle distance you will see a remarkable series of low hills rising a few hundred feet above the plain of Candahar, which is 3500 feet above the sea-level. Those hills are only a few hundred feet above the plain, but they constitute a very interesting series of trap formation. The low hills through which we have just passed near the Mel Pass are gneiss, while some of them are granitic. In front of the hills near Candahar you will see in the right of the picture the modern town of Candahar. To the left, again, you will see the ancient city and citadel and fortress of Candahar. They are wonderful ruins; they are not built of stone or brick, but of a hard and indurated earth peculiar to the immediate locality, and I have been told by officers of Artillery that they never saw bastions which would be more difficult to batter down. Immediately above this citadel, on the low range of hills, you will see in the distance some towers. In one of the many sieges to which this old city has been subjected (the new city is not above 150 years old), the enemy, by a striking military *coup*, got up to the hills during the night, took one of those towers by surprise, and so commanded the citadel and town, which had to surrender. In the midst of the modern city you will see the slightest indication of the tomb of Ahmed Shah, the founder of the Durani dynasty of Afghanistan, that dynasty which performed so important a part in the first Afghan war, and has been superseded by the Barakzai dynasty. In the immediate foreground there runs the military line to Candahar; but that is not the railway line, which will run somewhat towards the right. There is also some indication of the green plain of Candahar, excellently irrigated from running streams, skilfully cultivated, waving with harvests, and often yielding several crops within the year.

Perhaps this view is imperfectly represented; but it is one of the most interesting and beautiful views I ever saw in my life. It is that view from which people either take their first or their last look of Candahar, and it is a view that must have been looked upon with wonderment by many of the most distinguished, or of the most notorious characters in history—by Alexander the Great, by Tamerlane, by the Emperor Baber, by the Great Mogul, by Shah Abbas, by Nadir Shah,

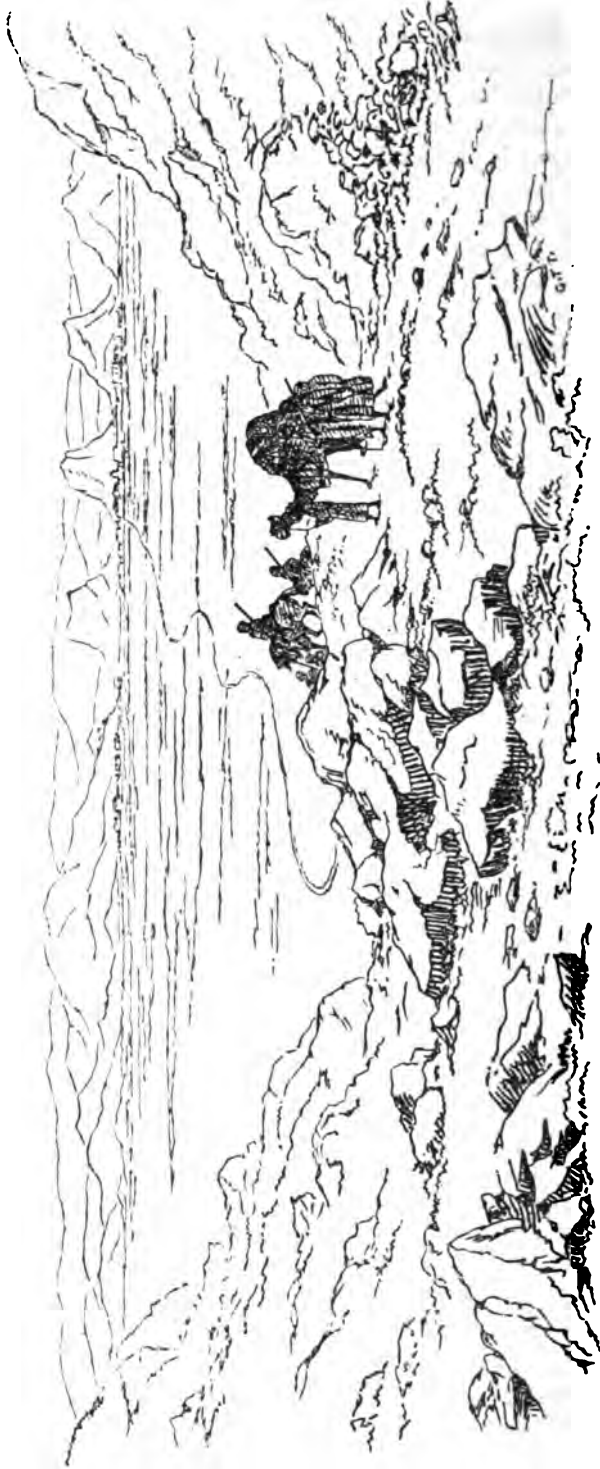


FIG. 10.—APPROACH TO CANDAHAR.

and others. All these extraordinary personages must have regarded the scene with as much wonderment as we do; for despite the revolutions of centuries this beautiful landscape remains the same.

Now, I have brought you to a distance of upwards of 400 miles from Sukkur, where I began my lecture, and I hope you have not found this journey exceedingly fatiguing or irksome.

I shall conclude by giving you a *résumé* of the distances you and I have, in imagination, travelled together. The country below the hills was 140 miles; the country within the hills was 120 miles; the country in the Pishin valley and the Khoja Amran range was 60 miles, and from the Khoja Amran range to Candahar 90 miles—altogether 410 miles. That may be called the military route; but the railway route which I have explained to you is somewhat longer. The railway route we take in this way: Indus to Sibi, 140 miles; Sibi to Gulistan Karez, 170 miles; Gulistan Karez to Gwaja—that is, the southern end of the Khoja Amran range—40 miles; from Khoja Amran range to Candahar 90 miles. The whole distance by railway line is 440 miles, say 450 miles with a slight margin for detours, and that represents the maximum journey which you have made with me to-night.

I may express the hope, before I sit down, that the statement I have offered is sufficiently scientific and geographical to satisfy the severe requirements of such a distinguished gentleman as Sir Henry Rawlinson, whose knowledge of these countries is unrivalled, vastly surpassing mine, although mine may be fresher, perhaps. I venture to anticipate that it may also satisfy the requirements of some of the Sind authorities present. I trust it has also been brief and graphic enough for the ladies and gentlemen who are members of the Geographical Society. I further believe that this oral statement, together with the pictorial illustrations, will have the advantage over a written paper, as it will enable you to carry away with you some pictures impressed upon the tablets of your brain and memory, better perhaps than any word-painting can pourtray. I hope that if you do carry away those pictures in your minds to-night, you will also think kindly and sympathetically of the men who have been engaged in these places—of the statesmen, politicians, and commanders who have formed so many great projects for the advancement of British interests in this quarter; of the British soldiers, your own white fellow-countrymen, your own flesh and blood, who have sustained your country's cause with a bravery which has never been surpassed, even in the annals of England; of the Native sepoy and soldiers, who have equalled in discipline and endurance their European brethren; of the Native Chiefs who have kept the road and protected our line of march, and who have also escorted many of us, and saved us from ambush and from overt attack, which otherwise would have proved fatal to us; of the men of science, civil and military, who have planned those important public works I have described to you to-night; and lastly of the patient, enduring, and

industrious native camp followers, who had no particular reward to expect beyond their bare wage, who had no honours, no glory to anticipate, but nevertheless did their duty as men like the rest of us, and who have but too often left their bones to whiten in the localities that have been depicted to you to-night. Remember, ladies and gentlemen, that to whatever class or whatever profession these men belonged, whether the colour of their uniform was black, or red, or blue, whether they were white-skinned or dark-skinned, they were all one in their sentiment of loyalty to the British cause: they were comrades and brethren in arms, in policy, and in administration, for the promotion of those vast interests which are comprised in the British Empire in the East.

Before the commencement of the lecture the PRESIDENT (Lord Aberdare) said that he was glad that on this, the first occasion he had the honour to appear before a Meeting as President of the Society, he had to introduce a gentleman of the eminence of Sir Richard Temple. It was usual, he believed, on such occasions to say a few words introductory of the speaker. In the present case it seemed almost impertinent to do so, as so many important events in India had made the name of Sir Richard Temple almost a household word with us. It would suffice to say that he began his career in India in the school which has produced so many eminent administrators—that of the late Lord Lawrence. Raising himself through all the intermediate grades to the post of Lieutenant-Governor of Bengal, he had to struggle whilst holding that office against one of the greatest misfortunes which could overtake a country—famine; and he took such measures that he has the honest pride of saying that not one single life was avoidably lost during the time of that famine, a pride which might be shared by his (the President's) predecessor, whom he was proud to see before him—Lord Northbrook. Since that time, Sir Richard Temple fulfilled the highly important function of Governor of Bombay, and he then had to undertake the gigantic work of which he had now to give an account. These few words would suffice to introduce to the Meeting a gentleman whose career, after all, needed no commendation at his (the President's) hands.

After the lecture, the PRESIDENT said that, before calling upon any one present to take part in this discussion, he would venture to draw upon Sir Richard Temple's memory for a few prosaic facts. The first was the date at which this work was commenced, and the second, what gauge or gauges had been adopted in prosecuting this railway across the plain and through the mountain ranges?

SIR RICHARD TEMPLE said the Viceroy's telegram was received by him at Poonah on the 14th of September, and the work was commenced on the 1st of October. As to gauges: below the hills, the Indian broad gauge, which is 5 feet 4 inches, and inside the hills, from Sibi onwards, the narrow gauge, 3 feet 3 inches. But he explained that when the 3 feet 3 inch gauge is finished from Sibi onwards, the broad gauge from Sibi to Sukkur would probably be made narrow gauge, inasmuch as it was not deemed advisable to break the gauge at Sibi.

SIR RICHARD TEMPLE, also, in reply to a further question from the President as to the steepest gradients on the line, replied: One in forty.

The PRESIDENT said that, under ordinary circumstances, it would be his duty to call upon Sir Henry Rawlinson to address the Meeting, because no person present was more fully furnished with personal experience and study than he; but he was unfortunately suffering—he hoped temporarily—from an affliction of the throat which prevented

him from addressing the Meeting. They had fortunately, however, present General Sir William Merewether, of Sind, the province which was originally occupied as a base of operation against Afghanistan, and he would therefore call upon him to speak on the subject of the railway.

General Sir W. MEREWETHER said he felt somewhat diffident in attempting to make any remarks, after the eloquent and most thorough manner in which Sir Richard Temple had described the scene of his labours and the work in which he had been engaged. He felt confident that there was nobody in that large and august assembly that had not been fully informed of and knew every inch of the ground from Sukkur to Candahar. Although, as he had mentioned on former occasions, he had spent a large portion of his life in Sind, he did not think he could add much to what Sir Richard Temple had said. He might, however, draw a contrast between the state of things described by Sir Richard Temple and what existed in former years, when our armies went into Afghanistan. Sir Richard had informed them that the telegram reached him on the 14th of September, and that on the 1st of October the railway was initiated. It would in time be carried on to Candahar. When completed, troops and goods would be able to travel from Sukkur towards Candahar at the rate of 16 miles an hour, under the most adverse circumstances. This would be a mere fraction of the time it took our troops to advance in 1839. From Sukkur to Sibi in former days was fourteen days' march. By the railway the distance could now be accomplished in twelve hours—not as many hours as it formerly took days. For the advantage thus gained, we were in great part indebted to the distinguished officer who had that night addressed the Society. Had it not been for his energy and the stimulus given to everybody, the railway might not have been completed now as far as Sibi; for after the month of April work was almost impossible, the heat being so great that all labour is obliged to be suspended. This rapidity of construction was, as he (Sir W. Merewether) had said on a former occasion, equal to anything that had been achieved elsewhere, not excepting America. There was one particular place on the map before them, to which he would beg to draw their attention, and in doing so pay a just tribute to one of the noblest Generals in the English army. It is Jacobabad, so called after his own name, General Jacob. He (Sir W. Merewether) had the honour of serving under that officer for many years, and from the knowledge he had of his personal character, he could say that there did not exist a more thorough English gentleman, a truer soldier, or more faithful servant of his country. Of his utter disinterestedness the Meeting could judge, from his deciding, in 1847, to make the place his home. He said (to use his own words), "The only way you can make the people of the country feel you are in earnest is to show them that you intend to live amongst them to work for their good." These are feelings which he (Sir W. Merewether) trusted would ever animate Indian statesmen, and lead statesmen and soldiers to carry forward the name of England in the country in which they were serving. The fears which were entertained regarding the dangers to which the railway was exposed from the Indus floods might, he thought, be safely set at rest. The embankment from Knsmore to Sukkur was made, he might say, under his supervision. The engineers were hampered at the commencement by deficiency of funds, but had instructions to make the best of it they could with the money at their disposal. At first breaches occurred, there being at that time in the Indus valley a cycle of years of inundations, which he hoped had now passed away. The superintending Engineer had staked his professional reputation that the embankment just mentioned would stand. The floods from Sibi and Dadar would be of little injury to the new railway, for, like similar places in America, the water could be allowed to pass over the railroad; it comes in the morning and passes away at night, and the injury is trifling. There is no danger, therefore, from hill floods by the Sukkur and

Sibi route. In conclusion, he said he felt he was only expressing the sense of the Meeting in saying that they were deeply indebted to Sir Richard Temple for the lucid and interesting account he had given of one of the most important works that has ever been undertaken in India.

General Sir HENRY THULLIER expressed a hope that the labours of the engineers in surveying and mapping the country on either side of the line of the railway, might be brought into practical use for the rectification of the existing map. Both geographically and topographically, extensive materials had now been gleaned for the improvement and reconstruction of the map of Afghanistan.

The PRESIDENT, in his closing remarks, said that in listening to the description of the new railway, and of the difficulties of the old military roads which have passed for thousands of years through the Bolan Pass and over the Khoja Amran, he could not but think of the fearful sufferings and mortality of the animal transport in the last advance of the British troops. The loss of beasts of burden during the late war (he believed 25,000 camels had died) was such as to seriously interfere with the means of commercial transport. No person has ever had to contend with the difficulties and hardships of travel in this mountainous region without retaining a vivid recollection of the sufferings he had endured. The utilisation of the fertile tracts of the interior, which have never been turned to profit, would justify the railway from a commercial point of view. As to its military importance, that was a question which would afterwards have to be decided. He could not sit down without referring to the historical interest which this portion of Afghanistan possesses. When the advance of the British troops was made into this country, many must have been led to refresh their memories by turning to the history of Alexander the Great, who entered India by the Khaibar Pass and the northern route, and on his return to Persia, dividing his army into two parts, he led one division himself through Beluchistan, the other marching through the Bolan Pass and over the Khoja Amran, operations which resulted in the loss of three-fourths of those two armies. In conclusion, he would invite the Meeting to join in expressing their thanks to Sir Richard Temple for his instructive lecture.

Notes on the Country between Candahar and Girishk.

By Captain R. BEAVAN, F.R.G.S. and C.M.Z.S., Bengal Staff Corps,
Assistant-Superintendent, Survey of India.

THERE is not much interest, in a purely geographical point of view, in the route between Candahar and the fort of Girishk on the right bank of the River Helmund. But it is of great importance as a military position, lying as it does at the extremity of the vast mountain masses that break up the whole of the country between the rivers Helmund and the Arghesan into a troubled sea of rock, hardly practicable even for pedestrians, and forming a complete obstacle to the movement of large bodies of men with military impedimenta.

Skirting the route, to the south, lies the great sandy desert, equally impassable to troops, and thus the tract I now describe forms practically the sole military passage between the east and the west, between India on the one hand and Persia and Turkistan on the other. It is, in fact, for armies what the Suez Canal is for ships. Certainly there are