

Afghan Boundary Commission's; Geographical Notes.

By Major T. H. HOLDICH, R.E., Commanding Survey Party,
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Quetta to Nushki.—From Quetta to Nushki the route taken by the Boundary Commission is the same as that followed last year by Sir R. Sandeman on his mission to South-west Beluchistan. For the first six miles or so it follows the direction of the old Kandahar road through the Gajaband Pass till it turns the shoulder of the mass of hills south of Quetta, of which Chiltán is the dominant peak. Thence it runs straight and even through the length of a narrow valley, overshadowed by the spurs of Chiltán, through Gird-i-bagh, where there is a good supply of excellent water, to Kának, a mud-built village (as indeed are all the villages of Beluchistan) 36 miles from Quetta, on a slight rising sandstone mound surrounded by a patch of irrigated land. The soil seems poor, and the cultivation scanty, water-melons alone being abundant, and such necessary supplies as wood and *bhúsa* (chopped straw) difficult to obtain even for a small force. From Kának to Panjpai, and from Panjpai onwards to Kaisár, another 45 miles, it is difficult to describe the general appearance of poverty and desolation offered by the country we passed through. The road traverses a succession of small valleys, hedged in by barren sandstone hills, across which every now and then it was necessary to pass from one valley to the next. A small stunted growth of shrub (chiefly wormwood and camel thorn) everywhere covered the dusty plain, trees being very scarce, and water in good supply only at Panjpai. Panjpai appears to have been a place of some pretensions in former times. The ruins of an old village closely adjoin the present site, and the crumbling towers and walls betoken a position of strength. It is, however, chiefly remarkable for about a dozen trees fringing the banks of the irrigation canal, a feature which in any part of Beluchistan could not possibly escape attention. Between Panjpai and Kaisár (a distance of 31 miles) water is only to be found at a place called Singbúr Chaman, a narrow little green oasis in this generally sterile wilderness, where five or six wells have been sunk and water reached about 9 or 10 feet below the surface, slightly brackish but drinkable. A curious feature about all this region from Quetta to the Helmund—a region always considered specially difficult to traverse from want of water—is the facility with which water can be obtained by well-digging. The karez system of irrigation (which is merely an underground canal constructed by sinking shafts at intervals and connecting them by a continuous channel) is common at least as far as Nushki, and the karez system is of course inapplicable to any country where water is not found tolerably close to the surface. Between Nushki and the Helmund wells have been specially prepared for the Commission party by the

Amir's agents. There is probably no part of that almost waterless plain where water could not be raised by Norton's pumps in the course of an hour or so. From Singbúr Chaman to Kaisár was a trying march of 25 miles over ground always rough and stony, and occasionally steep and difficult for laden camels, where the narrow path crossed an occasional watershed. This march was accomplished at night, and it speaks well for the efficiency of the transport (locally raised), and the fitness of the escort, that there were no sore backs and no falling out for hospital treatment at the end of it. The climate is specially trying at this time of the year; the intense heat of the sun by day is unpleasantly balanced by bitter cold nights, the extreme range of temperature in the course of twenty-four hours being quite abnormal. Add to this the effect of constant clouds of fine white dry dust—a dust which penetrates to the inmost recesses of all things, blinding and suffocating, and which must be swallowed by the pint; and it is clear that these early days of the work of the Commission are not all pleasure and pic-nic. Night marching will be the regular order of progression, at any rate till the desert is passed and the banks of the Helmund reached. Kaisár, though only a halting-place, was a charming change in the weary scene of desolation afforded by the monotony of dust-coloured sandstone hills overlooking dust-covered sandy plains. The Kaisár stream has formed a wide channel for itself, filled in with a jungle of tamarisk (occasionally mixed with a species of clematis) which fringes the banks, and marks the progress of the river with a really good solid-looking growth of vegetation. Here *chikór* and *sisi* (both varieties of the red-legged partridge), with other small game, were found by the sportsmen of the party, and bagged for the pot, regardless of the usual sporting conventionalities which give every bird a chance on the wing. The truth is we cannot afford to waste powder and shot. The last 10 or 12 miles from Kaisár to Nushki follow the bed of the stream till within a mile or so of the village of Nushki itself. All this line of route, together with a wide tract on either side of it, has either been already mapped by the survey officers who accompanied Sir R. Sandeman last year, or will fall within the regular course of operations of the Beluchistan survey party. Already (28th September) two of the surveyors with the Commission (Captain Gore and Lieutenant Talbot) have pushed on ahead along two lines of route, half-way to the Helmund, and have carried on continuous mapping to that distance. The geography of Beluchistan will be fairly complete, and an excellent start will be obtained for continuation along the line of the Helmund; but further than that it is impossible at present to predict what may be practicable.

Galícha, October 13th.—From Nushki to Kwaja Ali on the Helmund there is choice of three routes, which may be called respectively the Gazchah, the Chagai, and the Pishak. The two former converge at Mamu, after following approximately parallel lines about 14 to 20 miles

apart. The third, which is the most southerly of the three, and consequently describes the longer arc, is the most direct line to Rudbar. The Gazchah, or most northerly route, was the one selected for the march of the Mission, on account of the greater facility for procuring a sufficient water supply. But the Chagai route is quite feasible, involving only one or two marches longer than is convenient for an infantry escort. Both these routes will be surveyed, and as points on each are easily inter-visible, it is hoped that the connection will be kept up throughout. But there is a troublesome strip of absolutely waterless desert, bordering the Helmund on the south, and as this 50 miles or so must be accomplished by the party almost without a halt, it will be a serious obstacle to survey progress. The first march out from Nushki by the Gazchah route was an easy 10 miles over open plain with a surface consistency very like the *put* of the frontier, hard and level and excellent going in every way. The plain is covered with a low growth of tamarisk affording good grazing for camels. At Sanduri five or six wells afforded ample water supply. Water here is reached at 25 to 30 feet below surface level. And it may be remarked that this is by far the lowest depth of any well between Nushki and the Helmund, five to six feet is about the average for the rest of the distance. Sanduri to Band, about 15 miles, affords very small variation on the previous march. The same wide expanse of limitless plain, the same stunted undergrowth, and occasional sand-ridges (or drifts) of a few yards only in width, but deep and shifting in character, taxing for a minute or so the muscles of camels and mules. At Band (as the name implies) a *band* or dam has been constructed across the bed of a nullah in which a very considerable quantity of water is retained. In quantity indeed there was no lack, but the quality of standing water when it is a desert focus for all the living creatures of earth and air for many a mile round, always leaves much to be desired. Careful straining got rid of some of the worms and larger animalcula, but neither boiling, filtering, nor even alum, would render it entirely palatable. It should be remarked that the name of a halting-place simply denotes the position of water. As a rule, not a vestige of habitation is found even near the wells. An occasional *ziarat* or the dwelling of some desert fakir, is the only sign of humanity. Both *ziarats* and huts possess all the grotesque features common to Biluch constructions of the same nature all through the country. They may be described as rough inverted birds' nests of sticks, the upper ends of which are adorned with quaint devices, worked roughly on cloth, or more commonly with mere pieces of coloured rag, and the horns of animals (often of remarkable size and rarity) are constantly brought as offerings to a shrine, and, like the coloured rags, applied to the purpose of outward ornamentation. The interior is usually well filled with the offerings of devotees, offerings which speak strongly of the desert from whence they come. Stray scraps of quartz, or bits of coloured rock,

chrysolite, and serpentine, amongst which may be found curious mineral specimens, are quaintly mixed up with small domestic utensils, and ingeniously constructed little cradles, telling a tale of the hopes and wishes of such of the gentle sex as "love their lords," wishes which are common either in the desert or the city. Some of the ziarats have, however, one unusual feature. Probably as a protection against the prevalent winds which gather unusual force over these unbroken tracts, they are partially burrowed—a long ramp leading down to their floor level, some three or four feet below the ground surface.

At Shah Ismail, half-way between Nushki and the Helmund, is a ziarat of some distinction. An eminent saint who has left his name to the place where he was buried, died here about the time of Nadir Shah, and round about his grave are now collected many other graves of good Mahomedans, who have been carried here to be buried. The saintly tomb is enclosed within a mud-built crenellated wall, overshadowed by two stunted specimens of tamarisk, and adorned with the usual bundles of poles and sticks set up close by with gay streamers and coloured rags fluttering from them in the desert breeze. At the ends of some of the longer pennants or streamers are small bells attached, the musical tinkling of which is carried far across the uninterrupted waste around. An unpleasant peculiarity about these ziarats is the supposed possession of the "evil eye" by one or more of the fakirs residing in them. Certain it is that a failure to present a suitable offering to the shrine results in the sudden death of camels for which it is difficult to account by the usual supposition of poisonous plants or herbs.

From Band (25 miles from Nushki) the next four halting-places are Umarshah (10 miles), Zaro (8 miles), Kahni (19 miles), and Gazchah (14½ miles), in all of which there was a fair supply of well water found a few feet only below the surface. The physical aspect of this part of the desert is much the same as that already described, a flat, hard surface of *put*, bearing indications of occasional heavy rainfall and flood, and occasionally unmistakable signs of snow; the same somewhat scanty growth of shrub (chiefly a low species of tamarisk), and the same sudden occurrence of sand waves or dunes always suggesting the same query, Why are they not blown away by the strong prevailing winds? There must be some core to them, some obstruction on the general level of the open plain on which they formed in the first instance, and which retains them afterwards. That they are fairly permanent is evidenced by the growth of tamarisk brushwood, which is rather thicker and stronger on them than elsewhere.

From Gazchah onwards a marked geographical change occurs. A region of barren trap hills is entered—hills bearing all the same fantastic features common to those that crop out of the great plain between the Kojak and Kandahar, of which both their general strike and geological construction show them to be but a continuation. The first march out

from Gazchah follows the line of a broad watercourse for about 12 miles to a kotal or open pass (water being found on the surface close to this kotal), which debouches on to what is rather a plateau of rolling trap hills than open plain, the plateau rising to upwards of 4000 feet above sea-level, a height which is maintained to Galicha, from whence there is a gradual fall of at least 2000 feet across the waterless strip of 50 miles to the Helmund. The line of march from Gazchah to Safia (18½ miles), Shah Ismail (18 miles), Saliban (15 miles), Mazhda (11 miles), Mamu (15 miles), and Galicha (12 miles), is a mere track winding and twisting over the successive waves of rolling stone-covered plateau hills, with the line of distant rugged peaks to the south; a few scattered isolated hills on the northern horizon, and one or two remarkable conical peaks rising straight up from the plain, forming a peculiarly definite line of landmarks for the marching force. The direction at night was indicated by fires kept up all through the night at intervals of a few miles. By day it was hardly possible to miss the track. In a country where there is but one road signposts are unnecessary.

The Malik-dukán is perhaps as remarkable a peak as any in Southern Afghanistan or Beluchistan, and it most conveniently marks the site of Galicha, the halting-place for the last water before crossing the veritable desert. The Malik-dukán is a straight up and down conical peak as inaccessible in appearance as it is said to be in reality, of the invariable trap formation common to this part of the desert and containing mineral deposits worth examination. The strips of white alabaster decorating the graves about the ziarats, the blocks of light emerald-green chrysolite, occasionally streaked with red, and approximating to the many-coloured serpentine, are all said to come from this hill. Unfortunately time was wanting for a complete examination. The Malik-dukán is now reduced to the position of a survey point—a point too of great value—while a peak adjoining has been appropriated as a survey station. So far as the survey work is concerned, the difficulties of the desert have been surmounted. Plane-table surveys have been carried through two routes, and points already fixed on the Helmund which will secure a fresh base and a good start from Kwaja Ali and Rudbar. But beyond that? Are there hills to help us along or not? Time will show. Taking a general view of the map displacement, it may be said that the Beluchistan mapping of this desert has hitherto been about 20 miles in error westward, i. e. the sites of identified places have to be shifted by that amount to the east.

Between the large area of Beluchistan covered by the mapping of Lieutenants Talbot and Wahab last spring with Sir R. Sandeman's Mission, and that now completed by Captain Gore and Lieutenant Talbot (for my order to join the Commission came too late for me to be able to assist them in this first long link of the journey), North-east Beluchistan is now fairly complete in all essential points of geographical information.

One always interesting feature about deserts of this description is the water supply. As far as the trap formation water has always been found at moderate depths (from 10 to 30 feet) by well-sinking, and excavation has been an easy process; but after passing on to the trap it is a noticeable feature that whereas the water (on this higher level) is nearer the surface, it is not so easy to reach. The surface of all this rolling country appears to be either what is known in India as *kunkar*, or some hard deposit very much allied to it. This crust is not thick, varying from a few inches to a foot; below it comes moist sand and water immediately. This water supply is probably due mainly to the annual snowfall in the neighbouring hills, and also to the condensation of moisture given off from the vast flat plains to the east and south, where an occasional heavy rainfall converts them temporarily into wide-spread lakes.

GEOGRAPHICAL NOTES.

Major Serpa Pinto's Expedition into Central Africa from Mozambique.—This important Portuguese expedition appears to have encountered the usual difficulties with regard to native carriers which beset similar undertakings on a large scale in Africa; and this notwithstanding the powerful support of the Colonial Government at Mozambique. It has been delayed for several weeks near the coast for want of men, and a large number of loads have been sent back. This has necessitated a change of route. Major Serpa Pinto has now decided to take the coast-road to Pomba Bay, and if he can obtain there the carriers he requires, (about 250) he will make it his starting-point inland towards the Meza Mountains. His route to Pomba will probably be that taken by Captain Elton, in his journey from Mozambique to Ibo, in 1876, and he expects to be a month on the road. At Moosuril, where he has been detained, he has taken 178 observations for latitude and a number for longitude, the former of which fix the place as being 1° to $1^{\circ} 5'$ south of its present position on the charts.

The Upper Niger.—The exact position of the French on the upper portion of the Niger at the close of the year 1884 is not quite understood. A paper by General Faidherbe, late Governor of Senegambia, published in the *Revue Scientifique*, Paris, Nov. 15th, 1884, gives us authentic information. The fort of Bamaku on the Niger was occupied in April 1883, and the last mail from St. Louis has brought the news that a small steamer, sent from France in sections, has been forwarded to Bamaku, where it was put together, and now floats upon the Niger; on the 11th of September it travelled down stream *en route* to Timbuktu, which is 300 leagues from Bamaku, with no obstacle of any kind at

to take possession of a district which to the rest of Africa was very much like the Lake district of England to Londoners. In Mr. Thomson's book there would appear a delightful description of this paradise of Taveita. It was true that Mr. Thomson approached the region across an arid desert, where the sufferings of himself and companions were very great; but the approach to it along the longer route from Pangani took the traveller by the side of rivers, and compensated for its greater length by a very sensible diminution in his sufferings.

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II.

The Helmund.—Kwaja Ali, where the Boundary Commission first struck the Helmund, exists only in name. The ruins of one solitary mud tower, so near the edge of the river as apparently to be included within the limits of its bed at seasons of flood, alone testifies to the former existence of any village or fort. The bed itself in the month of October was hard to define. The actual width of the river was not more than 100 yards, but the fine white silt which bordered it extended to a width of about a quarter to half a mile on its left bank, and is doubtless at times all under flood. The river was fordable for unladen camels at Kwaja Ali itself, and under ordinary conditions fords can be found at intervals anywhere below Kwaja Ali. Thick clumps of tamarisk varied by the Euphrates poplar are a familiar feature throughout the course of the river, but at Kwaja Ali in particular the tamarisk was unusually fine and prominent. The valley is narrow. A sharp definite ridge on either side defines it—ridges of clay or sandstone hills, pebble-covered, and soft. The width from crest to crest varies from three to five miles. These ridges shelve down to the river with the universal sweep of glacia-like plateau so common throughout Afghanistan. These rolling plateaux (called *dasht*) afford about as good ground for travelling over as could be wished for. There was no struggling along an uneven boulder-covered clay river-bed anywhere. It was all straight and even going across the *dasht* at the foot of the glacia sweeping down from the hills. So far the view within the valley itself was limited, but when the ridges gradually increased in altitude to some 300 feet, it seemed probable that by gaining the summit of some of the more prominent square-cut bastion-like masses into which these boundary ridges were occasionally broken up, a wide view might be gained across the open desert land which stretched away from either bank. This was an utter delusion. Some four or five miles back from the valley on either hand was always another ridge—or rather another step in the vast desert hiding the distance from view like a wall—and from the summit of this again one only looked across a gently falling sweep of open plain to be confronted with another step at almost

an equal interval. It is not to be supposed that these steps are absolutely regular in their conformation, nor strictly parallel to the river course; but there they were, and after passing Rudbar where the far away distant Beluchistan peaks were last visible, no hill broke the horizon line again till reaching Kala Fateh. It was one vast desolate desert unrelieved by a single prominent feature.

But the valley of the Helmund itself is full of interest. From Luudi onwards to Kala Fateh one rides through and over the relics of dead kingdoms. The remains of forts, of deep-cut irrigation canals, of pretentious habitations that might have been palaces, still grimly holding their own whilst the surrounding villages have entirely disappeared, are the common features of the landscape. Broken pottery strews the way sometimes for miles at a time. But there is one rather remarkable feature common to all these ruins alike, as far as Kala Fateh, which is that they are all built of mud or of sun-dried bricks. Just once, when entering the fort or palace called "Kala-i-madre-i-padshah," about 12 miles beyond Rudbar, did I observe that I was crossing the brick (burnt brick) foundations of some building that had entirely disappeared. The fort and citadel of Kala Fateh too is founded on brick, although the entire superstructure is mere mud. The river widens after passing Rudbar, but still keeps to a well-defined channel as far as Kaju, where there is a very indifferent ford. The low sandy soil adjoining the right bank between the river and the dasht is here cultivated by means of very deep irrigation channels which can only be crossed by bridges, but there is ample room on either bank for a good road down the valley on the dasht at the foot of the hills. Chahar Burjak commands a much better ford than the one at Kaju, where the river is narrow but of uncertain depth. Leaving the valley on either side and ascending the ridges which bound it, very much the same appearance of limitless plain is encountered. But the field of view is not really large. The plains fall towards the river in vast steps, so that from the first ridge surmounted the next great step cuts off the horizon at a distance of from 5 to 15 miles, appearing like a ridge of hills in all respects similar to those just ascended. There are no hills in either case—merely the consecutive steps (from 200 to 300 feet in height) of a vast plateau sloping down to the Helmund basin. Another curious feature is the apparent absence of small local tributaries to the river. No opening is ever apparent in those square-cut sandstone cliffs, and it is not easy to say what becomes of the collateral drainage. The rainfall is doubtless very small, and from the observations that were made by the surveyors, who constantly ascended the cliffs bounding the valley, in the vain hope of catching a glimpse of some distant peak either to the north or south, the phenomenon of the Helmund itself disappearing into a vast swamp is repeated on smaller scales all through the country. In the case of the Helmund the swamp is never entirely dry, but in these minor instances

probably the rainfall disappears very rapidly. Considering the distance the Helmund water has to travel, the absence of tributaries on its lower course, and the absorption of water for irrigation, it is a matter of surprise that so much remains as we subsequently saw in the Hamún, or swamp, where its course is ended.

Turning northward from Chahar Burjak, it was not till we reached Kala-i-Fath (or Kala Fateh), by far the most remarkable place we had yet visited, that our eyes were gladdened again by the sight of distant hills on the Persian frontier. It can easily be imagined what assistance well-marked hills afford to the progress of a geographical survey.

From Chahar Burjak to Kala-i-Fath the road passes over low spurs of the plateau on the right bank, instead of following the bed of the river, and there were many signs that we were passing over what must once have been the river bed itself, notwithstanding its present elevation. The imposing mass of ruins which Kala-i-Fath presents denoted a former stronghold of far greater importance than any we had previously seen standing above ground. What may be buried beneath the surface it is of course impossible to say. The citadel still towers high above the crumbling mud walls of the fort, and if the sarai adjoining the fort, with its central domed roof and two enormous wings, is in any proportion whatever to the former traffic of the country, it proves that there must have been a considerable amount of trade passing along this route even in comparatively recent periods, possibly long after it ceased to be the capital of the Kaiani kings. The fort walls are about two miles in circumference.

Northwards from Kala-i-Fath the geographical features of the country present little variation from a view of endless plain, bounded on the far west by the Persian frontier hills. The road passes along the river bank, and occasionally dips into a dry part of the river bed through thick undergrowth here and there of tamarisk and wild caper. The most prominent tree (in fact the only few trees we saw) in this district is the Euphrates poplar. From Kala-i-Fath past the camping ground at Padh-i-Sultan, the great point of interest in the landscape is the enormous area which is covered by ruins. Dotted over the wide plain as far as the eye could reach were the last fragments of what appeared to be dwelling-houses, built high and square, and with some pretensions to comfort and appearance. But the terrible north-west winds had swept for ages over and past them, silting up sand drifts in the interior, and almost polishing the north-west angles with its persistent blasts. I have never felt anything like those Seistan winds in November. For severity and cutting intensity a north-easter in England is by comparison a gentle zephyr. The Kohuk band (or dam) across the Helmund and a Persian outpost were passed between Padh-i-Sultan and Deh-i-Kamrán. The band is a simple mud and wattle construction, but it was possible to cross the river on it.

The next march again took us over innumerable mounds still covered with burnt bricks and tiles, which might almost be called a prevailing geological feature. Nadali fort, standing high on a remarkable mound, and faced by one or two of similar appearance, gave rise to some speculation. Are these mounds natural or artificial? They stand about 50 to 100 feet above the surrounding level of the country, and they have all of them at one time or another been surmounted by some defensive construction. If they are artificial, it is difficult to account for the utter absence of any appearance of former excavations from which such huge masses of earth must have been taken. If natural, they are certainly most curious features in the country. Geological scientific opinion inclines to the "natural" view. In some instances there is the direct evidence of stratification in them—but not in all. The mounds which have been sites of former towns and villages, on the other hand are obviously composed of débris which crops up to the surface and betrays the existence of some sort of construction beneath. But this is hardly a geographical question. The general desert nature of the country so far changes considerably about this point. Thick tamarisk jungle growing to a height of 30 or 40 feet, with occasional stretches of excellent grass, were in delightful contrast to previous experiences. Dates and water-melons here too began to find their way to camp, and from that point to this (near Panjdeh) the melons have gradually increased in excellence till I think it may be fairly said of the Turkoman fruit that it is unsurpassable. We were now approaching a well-cultivated, well-inhabited land—cotton, wheat, and barley were abundant; the people (the Belooch tribes—Sijjaranis principally—had given place to Tajaks) were friendly but afraid; good water was abundant everywhere, and life began to be pleasant again as well as interesting. Still the country remained flat and difficult to survey. Close traversing, checked by daily observations for latitude, azimuth, and rounds of horizontal angles to such distant hills as were visible, were all that could be added to the topography—which was necessarily narrow for want of points of sufficient command to overlook the country. Nor was the actual mapping a matter of so much importance, inasmuch as the Seistan boundary commission had already previously settled the topography of much of Seistan under far more favourable conditions. Our chief efforts as far as Jowain were directed towards preserving a strictly accurate geographical position in latitude and longitude. Past Jowain new country was entered. There fortunately opportunity was afforded by the presence of hills for carrying on a rapid system of triangulation, combined with astronomical checks and traversing, which has never since been dropped. It is now well on its way by more regular procedure towards Maimana, and will we hope ere long close on the well-remembered Hindu Kush points north-west of Kabul.

From Hamún to Herat.—From Ibrahimabad to Takht-i-Rustam the road follows the right bank of the river, and skirts the eastern edge of the gigantic Hamún which is its last resting-place. The Takht-i-Rustam is not an imposing feature. From 200 to 300 feet above the plain it rises in a small well-defined peak from the sandstone cliffs bordering the swamp, and owes its importance in legendary history to the fact that there happens to be no other peak like it in its neighbourhood. From the Takht, however, a grand view is obtained over the lake, which in November can be seen from behind its thick and wide belt of reeds stretching away to the horizon. A Seistan north-westerly gale was blowing when I overlooked it, and its dark deep green and indigo coloured waters were driven along in white-tipped waves as far as the eye could reach. From Takht-i-Rustam to Jowain the journey was made on one of those bitter blinding days of wind and dust that prevented anything like accurate observation. A wide open grass plain, covered with ruins standing up white and ghastly in the dust-coloured atmosphere, and the outskirts of a large thriving town (Jowain), with the close-packed, mud-built, dome-topped houses of Western Afghanistan, were passed and left behind, before the camping ground was reached on the bed of the Farah Rúd. There were signs here of our unpopularity in the country (about the first signs we had observed), and it was thought well to avoid Jowain. Lash, as seen from the Jowain side of the river, is an exceedingly picturesque town, built close on to the edge of the cliffs which form the right bank of the river, and giving some idea of defensive strength. It was only a passing glimpse that we obtained of either. From our camp on the bed of the Farah Rúd the great interest of the geographical work began; for before us was an absolutely new route; through country of which little or nothing was known. It may be as well to give the camping-grounds and distances. First march to Kushk Rúd, $17\frac{1}{2}$ miles, a narrow valley, bright green, with thick grass and a plentiful supply of water. We rose from the Farah Rúd on to an open plateau covered with small stones and gravel, very similar to the dasht of the Helmund valley. Wherever met with, it affords excellent "going." Kushk Rúd to Kila Kén, about 14 miles of easy marching to a village in the open plain, where supplies and water were plentiful. Kila Kén to Kila Kung, about $21\frac{1}{2}$ miles. We turned the corner of the Galai Koh range here, and from this point passed through a succession of open valleys bounded by narrow but very steep ranges of trap and limestone (very similar to the conformation about Kandahar), by roads which were good on the whole, but occasionally obstructed by the very deep irrigation canals drawn from the Farah Rúd. From Kila Kung to Zehgin was a march of about 20 miles, still through open ground bordered by hills which crossed the general direction of our route (north-west) about at right angles. All this country is fine, open, fertile land, reminding

one much of Pishin. Much of it is cultivated, and where this is the case, the villages, though at wide scattered intervals, are large and flourishing. They are all surrounded by walls with mud towers at the flanking corners, after the universal pattern of Afghanistan. It may be mentioned about Zehgin that its position, as marked in the Turkestan map, is approximately correct. This is curious, as the average error in longitude of most points that have been identified is very considerably to the east.

From Zehgin to Sangbur—17 miles—passing through the Anardawa gap in the narrow range on our left. There is no pass or kotal; the Anardawa river makes its way through the hills, and affords a natural highway. The village of Anardawa is snugly placed on either side the river within the hills, and was a curious contrast—with its well-built, well-kept houses, neatly constructed walls enclosing gardens and orchards of apricot, almond, and pomegranates, and its well-to-do appearance—with anything we had seen before. A curious feature about the place is the blast of intensely cold wind which faced us as we passed through the gap, and which was noticeable half a mile before reaching the entrance, but which disappeared on the north-west side of the hills. Advantage is taken of this for the working of innumerable windmills of a pattern new to me. A vertical shaft has four projecting wings, or sails, which rotate horizontally between two walls which are built parallel to each other, so as to form a tunnel in the direction of the prevailing wind. The wings were about three or four feet broad, and about ten feet high, usually made of coarse matting. The grinding power of these mills, judging by the rapidity of rotation, must be enormous. Country-made boots (of sheepskin with the wool on) were obtained at Anardawa. From Sangbur, a longish march of 22 miles, takes one to Karez-dasht, where there is water sufficient for a small force. The road passes through (not *over*) the Jumal Ghazi gap, which can in no sense be called a pass, although a main watershed is crossed some distance after leaving the hills. The rise is exceedingly gentle and easy, up an open nullah very similar to the lower stages of the Bolan or Khojak passes. Jumal Ghazi is a fine peak (as peaks go in this part of the world—and they are not wanting in rugged grandeur if they are in altitude), and is an excellent landmark for many marches. This is probably the "M' Kaiser" of the Turkestan map, but no such name was identified. Passing on from the insignificant fort of Karez-dasht, 10 miles brings us to Mangal, within sight of the hills overlooking Sabzawur, but out of sight of the town itself on account of those very hills. There are large villages between Mangal and Sabzawur, and a good deal of cultivation. It is all open plain, bounded by rugged and sharp-edged hills, which here contain granite, giving them a singular deep red and purple appearance in the clear evening atmosphere. The extraordinary

effects of refraction were never more marked than at this place. The walled villages stood up high as vast citadels and fortifications, and it was really not easy to determine their nature. The next march to Sher Baksh was over the waterless plain and up to the northern watershed of the valley—a long march of 23 miles over a perfectly open plain, covered with the same small scrub of camel-thorn and many nameless but thorny varieties of the genus "bush." Sher Baksh possesses a nice little spring of clear good water. It is a green little spot just below the watershed, which falls gently to it. Here again we passed over that open variety of watershed, with an ascent so gentle as hardly to be noticeable, and a descent which might perhaps be called steep for some 20 yards or so, which is so common in Afghanistan. It is a mistake to call these gentle ascents and descents by the name of "pass." They are better classed as "open kotal," there being no English word to represent them. And here it may be remarked that while the well-known word is pronounced *kōtal* throughout Northern Afghanistan, it is distinctly called *kotēl* in this part of the world. The next march was a little trying. Thirty-eight miles over and amongst perpetual sand-covered rolling lines of low hills, crossing one narrow little valley after another, and winding in and out in a maze of small hillocks, till we reached the pleasant little oasis of Chahgazak. Here at last we had a friendly reception, and were glad to have put 60 miles of something very like desert between us and our Nozai and Atohakzai friends about Sabzawur. Here we met the first Turkoman in his Turkoman hat. In a very short time he was immensely popular. We were now within the limits of a country which has suffered much from Turkoman raiders. From Chahgazak to Pahre, 17 miles over a rolling stony plateau, and in and out of small ravines, on to an open, partly cultivated plain, with Pahre nestling closely under the opposite hills. From these hills—spread out in a wide open plain to the east, dark here and there with thick lines of fruit-trees, whitened here and there with long lines of bastioned walls lit up by the western sun, with the glint of minarets and the curious patchwork of light and shade which denote a great city—we can *at last* see Herat.

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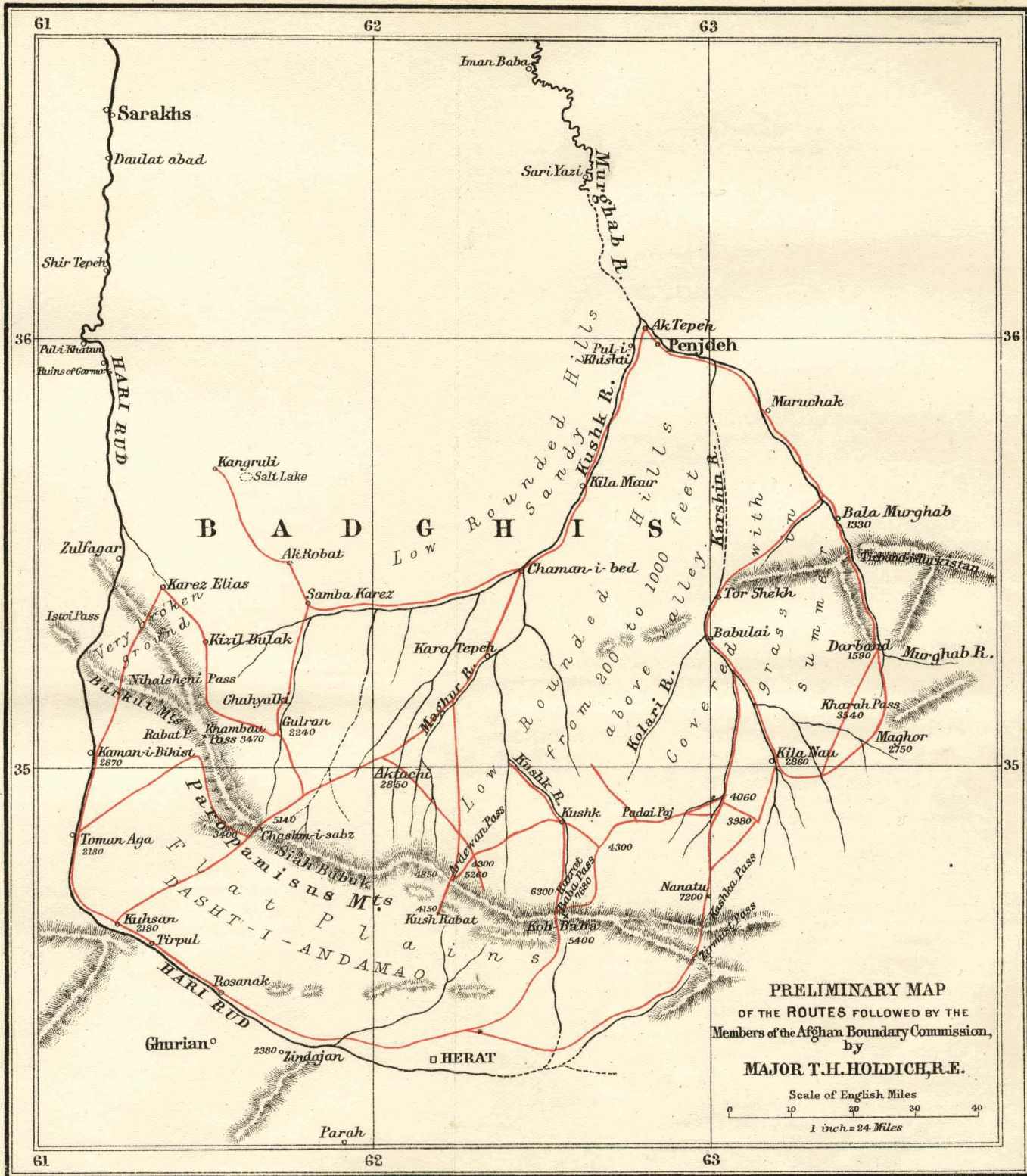
By Major T. H. HOLDICH, R.E.

(Read at the Evening Meeting, March 23rd, 1885.)

Map, p. 352.

[MAJOR HOLDICH's paper was read to the meeting by General J. T. Walker, who made the following introductory remarks:—

At the present time the eyes of the whole civilised world are turned towards that dimly known region, the Northern Frontier of Afghanistan, with anxiety and apprehension lest a casual encounter between a few Afghans and Cossacks, or more probably the action of some semi-Asiatic Russian general hungering after military distinction and advancement, should precipitate into war the two great nations who have hitherto been the pioneers of civilisation in Asia; for such a war would perpetuate the reign of rapine and bloodshed which has long lasted over a region now desolate and deserted by man, but which was once fair and happy and well peopled, and may become so again very soon, if only England and Russia can learn to look on each other as friends and not as foes, in Asia as well as in Europe. Thus at this time it is a great gratification to me to have an opportunity of bringing prominently to the notice of the Royal Geographical Society the labours of three officers of the Royal Engineers—Major Holdich, Captain Gore, and Captain the Hon. M. G. Talbot—who served for some years under my orders in the Survey of India, and are now attached to the Afghan Boundary Commission as survey officers, because in their present sphere of operation they have already done much to throw light on a region of which the information hitherto forthcoming has, unhappily for the peace of the world, been very vague and conjectural, not merely, as regards the mapping of the country, which in many parts was exceedingly inaccurate, but also as to various essential particulars regarding the races by whom it is inhabited, their distribution *inter se*, and their modes of life.



All three officers served with distinction in the late Afghan war, and when not actually serving with the army in purely military duties they were employed in surveying, an occupation which you may probably regard as very peaceful and harmless; but surveying in an enemy's country is liable to be carried on with greater risk from foes lying in ambush than is incurred in fighting an open enemy on the battle-field; and when, as in Afghanistan, the survey is conducted in a region teeming with fanatical Mahomedans, who are taught by their priests to believe that the slaughter of a Christian, however treacherously and villainously accomplished, is a sure passport to heaven, the surveyor must have no little fortitude and resolution, and much keenness of apprehension in deciding where he may go to and when. Happily the officers of the Survey passed almost scathless through this ordeal, and notwithstanding the many difficulties under which they laboured they succeeded, during the war, in making extensive and very valuable additions to our knowledge of the geography of Afghanistan; indeed I believe it may be said without exaggeration that their maps and the geological survey map constitute almost the only benefit which science and civilisation have derived from England's second venture in Afghanistan. Shortly after the war a military expedition against a frontier tribe, the Mahsúd Waziris, who had been raiding into British territory, afforded Major Holdich an opportunity of ascending some high mountain peaks on the eastern borders of Afghanistan, the observations at which enabled considerable additions to be made to the previous maps. That was followed by an expedition to the Takht-i-Suliman, or Throne of Solomon, the highest peak of the well-known Sulimani range, which forms so considerable a portion of the western Indian frontier. This expedition is specially remarkable in that it is the only instance I know of, in the course of upwards of thirty years' experience of survey operations on the frontier, in its entire length from the head of the Assam valley round to Lower Sind, in which the Government has despatched a military expedition across the frontier solely for the purpose of acquiring geographical information; it was undertaken on the urgent recommendation of Major Holdich, who represented that a large extent of unknown country might be surveyed from the summit of the Takht and collateral points, and that observations were also wanted in this quarter to supplement others already taken on the Waziri mountains. Now there is no more liberal government in all the world, probably none so liberal, as that of India in all matters regarding surveys and scientific investigations within its own limits, but it has invariably displayed an unfortunate want of enterprise as regards the extension of geographical knowledge outside those limits. In every instance but this one, we owe our geographical acquisitions beyond the frontier to the initiative, not of the Government of India, but of the lawless marauding tribes on the border; these tribes have come raiding

into British territory, and thus compelled the Government to send troops to pursue them into their own country, and while there to make a survey of it. In some few instances Government officers have exceeded their authority and gone across the frontier, making surveys or acquiring useful information; but so far from being encouraged for their enterprise, they have invariably been censured, and they were fortunate if they escaped deprivation as a punishment for a breach of the frontier regulations. Thus it is a feather in Major Holdich's cap that he succeeded in moving the Government to despatch this expedition to the Takht-i-Suliman. I need scarcely tell you that he made the most of the opportunity it afforded him for making additions to the map of Afghanistan.

The next expedition into Afghan regions was initiated by a marauding tribe, residing in the Zhob valley, which made a raid into British territory, and had therefore to be visited by a British force in their own country. Major Holdich was summoned from a brief holiday in England to accompany this expedition, and had just overtaken it, when he had the gratification of being appointed to the command of the survey detachment with the Afghan Boundary Commission which he immediately proceeded to join. He has already communicated two interesting geographical notes to this Society—published in the 'Proceedings' for January and March—on the route taken by the Mission in advancing from Quetta to Herat, along the line of the frontier between Persia and Afghanistan. The second of these notes closes with the intimation that the Mission had reached a line of low hills overhanging the village of Parah from which at last Herat could be seen "spread out in a wide open plain to the east, dark here and there with thick lines of fruit-trees, whitened here and there with long lines of bastioned walls lit up by the western sun, and the glint of minarets, and the curious patchwork of light and shade which denote a great city."

His third note, which I am about to read to you, was written from the winter quarters of the Mission at Bala Murghab, far to the north of Herat, on the border between the Afghans and the Turkomans. It is of particular interest at the present moment, as it gives some account of the country to the north of Herat, the very region which is now in dispute between Russia and England as regards the territorial claims of the ruler of Afghanistan.]

Herat.—Herat has been frequently described by travellers previously, and for all information respecting its immediate surroundings, its defensive walls, its citadel, its buildings and its streets, the writings of those travellers must for the present be the authority. No member of the Commission has as yet been allowed to visit Herat, and nothing better than the impressions gained by a more or less distant view, sup-

plemented by verbal information received from some of its inhabitants, can be offered to geographers.

But there were one or two very distinct impressions to be gained by a distant view, chiefly that of its open position, and liability to capture. The villages cluster round it right up to the foot of the mud walls surrounding the city, and the city itself is commanded from almost all sides. A very careful drawing, made by Mr. Griesbach, of the Geological Survey, from a point less than two miles distant, illustrates this very fully, and also shows the generally ruined appearance of the interior. It could be invested without much difficulty. The villages on all sides afford capital cover; and the impossibility of destroying these mud-built villages, and so far removing the débris as to destroy the cover also, has been sufficiently well illustrated in the last campaign at Kabul, when an attempt was made to destroy such cover round Sherpur. That Herat should have changed hands so often, and so easily, is no matter of surprise to any one who looked down on it across the open plain from the Parah hills. That it should ever have made an effective defence is much more matter for surprise.*

The valley of the Hari Rud is a singularly straight, well-defined valley—just as it is shown in the present maps of Turkistan—with very marked limits both to the north and south. The southern line of hills which we crossed at Parah is of comparatively insignificant altitude, the highest peak of it (Do Shakh) being about 7500 feet above sea-level, instead of 12,000, as entered on some of the most modern maps. At Parah the hills are not more than 500 or 600 feet above the city, but exact altitudes can only be given when final observations are taken. The Paropamisan mountains immediately north of Herat rise to respectable altitudes, some of their peaks being nearly 10,000 feet above the sea, and as they trend eastward, gradually gathering themselves into the central watershed of the Koh-i-Baba, they also gradually increase in height. Until exact information can be given, it may be pretty safely concluded that 15,000 feet is the utmost limit in height of anything west of the Koh-i-Baba. There was no snow visible anywhere as the Mission approached from the south, and up to this date (end of December) only a slight sprinkling has been observed on the highest points. Westward from Herat this northern watershed bends considerably to the north, at the same time diminishing rapidly in altitude, bifurcating in long. $61^{\circ} 30'$, and tailing off in two minor ranges to

* Nevertheless, Herat enjoys the pre-eminence of having stood more sieges than almost any other city in Central Asia, having been depopulated and destroyed oftener, and always having risen from her ruins, if not with renewed splendour, at all events with a vigour and a tenacity of life that is without a parallel. (*Macgregor.*)

The population has been liable to great fluctuations. Ferrier says that before the siege of 1838, when it was so bravely defended by Eldred Pottinger, the number was 70,000, and when the siege was raised 6000 to 7000 were all that remained. Pottinger considered it to be a city of more trade than perhaps any other in Central Asia.—[*General Walker.*]

the Hari Rud. A direct route connects Kuhsan with the Kushk river at Kara Tepeh, crossing the watershed at Chashma Sabz (called Chelma Sanz in some of the old maps), and the actual rise and fall over the backbone of the range is barely 1000 feet. Two other northward routes cross it between Chashma Sabz and the Hari Rud, one of which is the Kumbau. Eastward of the Chashma Sabz route are the three well-known passes of Ardewán, Hazrat Baba, and Zirmust, all of them trade routes at certain seasons of the year. Although these must be considered the main roads northward, yet they deal with very different conditions to those on the west. They are not only higher, but by no means so simple. General Walker's Turkistan map very correctly shows rather a succession of "kotal," or watershed crossings, than a simple pass over a narrow ridge. But a detailed description of these passes is hardly within the scope of such notes as these.

The Hari Rud Valley.—To return to the actual route of the Mission. From Parah the direct road to Herat sloped gently down eastward into the Hari Rud valley. It was apparently a fine open road all the way. Our route, however, struck off to the north-west, crossing the hills by a narrow track which was not always easy to find, as it wound in and out of ravines, and over minor watersheds, till it finally struck into a fairly open nullah bed, which carried it down to the valley of the Hari Rud. There was nothing remarkable about this byway into the valley. It was not a good road, but it was sufficient to take the party to Zindajan, without passing in dangerous proximity to Herat. The valley of the Hari Rud, west of Herat, would be much better described by any traveller passing through it in spring or summer than in November, when the bleak north-west winds swept over its wide plain, and raised dust enough to hide all appearance of its abundant fertility. The villages Zindajan, Gorian, Rosanak, &c., are very large, and always surrounded by a network of mud walls. So that it is not always easy to see how much of the village is fully inhabited, and how much consists of merely empty mud buildings. There was a very large proportion of the latter in every village that could be thoroughly explored.

Not far from Zindajan the road to Kuhsan crossed the Hari Rud river, which is here divided into several streams, none of which, in the month of November, were more than a foot or two in depth. The valley at Rosanak still retained the same wide open appearance which it presented about Herat. After leaving Rosanak, however, it narrows considerably, and at Tirpul is less than a mile in width. At Tirpul (as the name suggests) is a bridge in a very fair state of preservation. Its construction is exceedingly strong, and the design is really ornamental. The striking similarity in the appearance of this bridge with a sketch of the bridge of Pul-i-Khatun which was taken by Mr. W. Simpson, the special artist of the *Illustrated London News*, suggests that both were constructed by the same engineer. The Tirpul bridge is still practically

efficient. The parapets, and some of the roadway of the approaches have disappeared, but the bridge itself wants but little repair to make it thoroughly effective. Not far from the bridge-head—on the left of the road—are the remains of what must once have been a handsome sarai, or rest-house for travellers. Even now it affords welcome protection against the bitter northern blasts which pour through the funnel of this narrow valley.

The valley opens out again before reaching Kuhsan, which is situated in a rather high and exposed position about a mile from the right bank of the river. The cold here was intense, owing to the strength of the northern wind. The thermometer registered on the night of the 16th November about 20 degrees of frost; but the actual temperature was nothing unless aggravated by the fierce north and north-west wind, against which protection seemed impossible. Fortunately, Kuhsan was one of the few places where there was abundance of wood to be had for the trouble only of cutting.

The Badghis District.—On the 23rd November, after the junction between the two sections of the Commission, which had started from India and England respectively, and after a good base had been secured for the continuance of survey operations, a fresh start was made northwards, and survey parties pushed forward in all directions for the mapping of the most important tract of country yet encountered. Throughout that rather indefinite district known as Badghis, which apparently includes everything north of the watershed of the Herat valley to Penjeh, between the Hari Rud on the west and the Upper Murghab on the east (although some local authorities make it a much smaller area by limiting its western boundary to a line running north through Gulrân, or Gurlin, as it is called on present maps), there is not a single place of importance that is even approximately correct in geographical position. This is not surprising, considering the materials from which the present maps are compiled. It is a noticeable feature that the small topographical details are in many parts most curiously accurate, and this apparent anomaly would naturally occur in a compilation from carefully surveyed traverses, of which the ends were based on no fixed position. Reference has already been made to the line of mountains which form the northern watershed of the Herat valley, and which are usually called either the Paropamisus or Kaitu or Koh-i-Baba.

From this great watershed (of which the Tirband-i-Turkistan is an offshoot) the drainage runs away northwards through a most interesting but almost indescribable country. The view from the mountains, looking northwards towards Sarrakhs and Merv, is as if a vast sea of liquid sand had been violently agitated by a passing storm, and had then suddenly been consolidated by some miraculous agency ere the waves had time to fall. It is a sand glacier stretching northward and westward as far as the eye can reach. Each many-folded wave of hills

looks diminutive and insignificant from the height or distance of the Koh-i-Baba, or of the Band-i-Turkistan; but a nearer acquaintance with those waves dispels the illusion. They rise from 200 feet to 600 immediately above the valleys and about their indefinite central watershed; between any two great streams, they reach 1000 feet or more. From the point of view of the valleys they become round-topped, smooth-sided hills, difficult to ascend from their steepness, and almost impossible to represent on any system of geographical topography on account of their multitudinous summits. And they are not sand, though they get more and more sand-covered as they approach the northern desert. They are composed of sandstone-clay, and are not only cultivable on their lesser slopes, but marvellously fertile. We are all looking forward to the days of spring, when grass knee-deep, spangled with flowers like an American prairie, will cover them. The stiff, straight, dried-up stalks of a bygone summer, which even yet cling to the northern and less sun-dried slopes, will then have disappeared, and the whole country will be green.

Passing over the Chashma Sabz Pass, one section of the Commission dropped rapidly down into a very traversable watercourse which wound and twisted its way towards the river Kushk. The march was rapid, and surveying was carried on with difficulty, owing to the small strength of the survey party which could be detached for work along any one route; but there was ample time to note the general nature of the road, its difficulties, and surroundings. The edges of the narrow little rivulet were fringed with a tangle of briar like an unkapt hedgerow in England, and the stream itself wound along like a ribbon of bright green, twisting about the bases of yellow hills, on which the stiff unbending stalks of the *assafotida* plant stood at intervals like sentinels. There was hardly a sign of a village or habitation of any description on the spots selected for camping. Deserted graveyards, often on the ridges and hill-tops, wherein might generally be found a few carved stones, the quaint designs on which showed great artistic skill, were usually the only token of human existence. Game was abundant. Chikór could be shot near the camps like partridges at home in the early days of September, and herds of deer (we have not yet quite satisfactorily established the variety, they appeared to be a cross between antelope and sheep) could be counted by the dozen as they wandered gently over the hills for their evening visit to the springs.

The first few marches north of the Koh-i-Baba carried us over a constant succession of watersheds from stream to stream, till we struck into a wider and more defined valley than usual, called the Maghur. Our entrance into this valley was promptly disputed by a "sunder" of wild pig; but as the ground was good for riding they had speedily to give in, after leaving four or five gigantic specimens of their race on the level banks of the river. A long straight run down the Maghur

for about 20 miles brought us to its junction with the Kushk at Kara Tepeh, and from that point we followed the Kushk river to Pul-i-Khishti.

A description of one of these Badghis valleys might almost serve for all. Varying in width from one to three miles, hedged in by the hills which bound them on either side like a wall, and thus protected from the sweeping wind blasts which drive over the higher levels—curling up the dried vegetation in the autumn, and leaving marks on the soft surface of the hills like the marks in the bed of a torrent—these valleys should be havens of rest and verdure. The water supply is ample, and the possibilities of irrigation and cultivation abundant. The soil is excellent, and nothing seems wanting but the hand of man to till them and to take from them that which they are so capable of producing. I have seldom seen such valleys—such a land of promise, and yet so strangely desolate and deserted. It is the Turkoman raider who is the curse of this country, and he has been so from time immemorial.

Kara Tepeh ("black mound") is but the remnants of an old mud-built fort surmounting a mound which may possibly be artificial, though all signs of the excavations from which so large a mass of earth was taken have long since disappeared. The mound stands near the junction of the Kushk and Maghur, overlooking it, in fact; and the fort is in the last stage of decay. Its only importance is derived from the fact that it commands two roads towards Herat. From Kara Tepeh to Chaman-i-bed, where there is another ruined fort, again commanding a somewhat important river junction—viz. that of the Dahna Islam, which combines the Gulrân and Ak Robat streams with the Kushk, the road still follows the Kushk valley, only avoiding a bend in the course of the river by passing over a spur of the hills on the left bank, not far from Kara Tepeh.

At Chaman-i-bed were the first signs of cultivation and the first Turkoman encampments. A few settlers had come up the river so far to prepare the ground ere winter set in, and they looked out at us curiously from their little towers of protection against raiders, as we passed them. They were ploughing and digging water cuts and channels for irrigation. They plough deep and use horses for draught. At about 21 miles from Chaman-i-bed down the valley of the Kushk, stands Kala (or Kila) Maur. There is no vestige of a fort existing here, except the comparatively modern ruins of mud walls surmounting the site of the ancient Bakshur. The city of Bakshur must once have covered an area of about half a square mile or more on the left bank of the river. The débris of the old city and its walls now form an irregular mound, of which the surface is strewn with bricks and broken pottery. The crown of an old brick-built arch was distinctly recognisable on the surface of the mound, and many of the fragmentary pieces of pottery bore traces of both art and skill in manufacture, such as is probably

lost. I have observed nothing like it elsewhere. About a mile north of Bakshur, on the same bank of the river, were signs of another sand-buried city of almost equal extent. The sand hills which closed in the valley at Chaman-i-bed, and south of it, were here diminished in height and receded far from the left bank, so that Bakshur stands more or less in an open plain, which in bygone ages may have been rich and fertile. Now, however, the steadily advancing sand sea has overlapped this district, and probably only a comparatively narrow margin near the river is cultivable.

For about six or seven miles before reaching Kala Maur, the waters of the Kushk had disappeared underground. At Kala Maur they again come to the surface. For the next 20 miles the Kushk flows with a steady current to Pul-i-Khishti (or bridge of bricks) which, as the name implies, is a strong brick-built construction across the river about a mile (or rather less) above its junction with the Murghab. The valley becomes again confined and narrow after passing Kala Maur, the sand hills rising to 300 to 500 feet above the level of the valley, and often shelving down with steep scarp slopes to the river banks. A great deal of the water is here utilised for cultivation, a very deep canal being carried along the right bank up to and through the delta formed by the junction of the two rivers. Pul-i-Khishti is not altogether a bridge. Had a mere roadway alone been required, the construction would have been different. It was intended chiefly as a "band" or dam to secure a head for further irrigation on the left bank of the river. It has also served as an aqueduct for higher level irrigation, the fall of the river above it being considerable. In a much simpler form this construction is common enough in northern Afghanistan. I have seen several instances in the Wardak or Logar valleys south of Kabul.

Ak Tepeh ("white mound") is a very remarkable point commanding the junction of the two rivers. As the name implies, it is a *white* mound which, under sunshine, is conspicuous for many miles round. The position consists of this mound which is about 150 yards long and 70 or 80 wide, irregular in shape, about 100 feet above the valley level, surrounded at present with an inefficient wall and showing signs of occupation from the very earliest times. Whether it is artificial or natural it is hard to say. Some faint traces of stratification were observable, but not enough to decide the question for certain. Five or six miles before reaching Pul-i-Khishti the hills on the right bank of the Kushk cease, trending away round to the left bank of the Murghab, and leaving a well-defined delta to fill in the fork between the two rivers. This delta is a kind of steppe, for the rivers run in narrow valleys some hundred feet below it, and out of this valley rises Ak Tepeh as if it were originally part of the steppe cut off by some act of nature from the rest. The top of Ak Tepeh is on a level with the steppe, and some 500 or 600 feet lower than the hills four miles away to the south,

or those near by on the north side of the Murghab. It may be mentioned that there are other mounds besides Ak Tepeh, not far from it on both sides, similar in character, but much smaller. These would make it appear to be a natural formation, as there is no apparent artificial object to be gained by their existence. Ak Tepeh is distinctly the strongest and most important strategical position in the country. It dominates all the roads to Herat, which diverge from the head of the Kushk and Murghab as well as the great high-road to Maimana and Balkh from Persia, and it bars the way to the entrance of the two finest and most fertile valleys north of the Paropamisus and Koh-i-Baba. The Murghab is a deep and impassable river near Ak Tepeh. It is from 50 to 70 yards wide, flowing between high banks, and is said to be unfordable even at the season when it is low, which was when we were there in December. This, however, I have reason to doubt. The ruins of the old Penjdeh fort are some five miles up the Murghab, on its left bank, and the new fort is a mile or so further up. The latter is not remarkable in any way. The Sarik Turkomans now occupy this ground in great force; all the five divisions of the tribe being represented in separate sections with their "kibitka" (blanket-covered huts) villages dotted over the level plain on both sides of the river; interspersed with a few more permanent mud-built places. They are a pleasant, friendly lot of people, well disposed towards us, but too well off to care much about trade. The few Jews that live amongst them did nearly all the trading in carpets, kurjins (saddle-bags of a sort of carpet manufacture), and silver ornaments; the latter being handsome, but coarse in workmanship. The entire absence of arms amongst them was a noticeable feature, particularly when taken in connection with their dexterity with their triangular spades. They are distinctly agricultural in their tendencies, and not military. It is said that it takes some time to appreciate the points of the celebrated Turkoman horses. I have not arrived at that point, yet there is great appearance of breeding about their fine heads, small ears, and large full eyes; but for the rest they are (taking them all round) a weedy-looking race, with no quarters, no bone, and no compactness, and I doubt whether we saw a horse with four sound legs amongst them. Their capability for such feats of endurance as we know they are occasionally called on to perform is evidently due to most careful training and preparation beforehand. A stroll into the Turkoman encampments was always interesting. They live in circular huts made of thick felt blankets stretched over a wooden framework like gigantic beehives. The door is always closed with a hanging carpet. The women make the carpets, and many ornamental devices for decorating the interior of their huts besides. Turkoman women are not perhaps so much "en evidence" as the men, but they showed no particular shyness. Their features are too irregular for beauty, but they have the same open pleasant expression as most of the

men. Their dress was often most picturesque; the head-dress being a small silver cap with a handsome silk puggree skilfully twisted round, and occasionally long silver pendants attached which fall over the shoulders. The dress itself appears to be a long loose garment, confined at the waist with a kummerbund, or loose pyjamas. The material of the dress was sometimes silk, and exceedingly handsome in design. The authority of the women in the family circle was often amusingly obvious.

The Band-i-Nadir is a bund, or dam, across the Murghab, from which five irrigation canals diverge and are carried down the banks of the river. These five canals are said to be appropriated by the five sections of the tribe, which thus each possess their own water supply for purposes of cultivation in equal proportion.

The only place of importance between Penjdeh and Bala Murghab is Maruchak, where there is the largest fort we have seen, and the remains of a brick bridge which might be reconstructed without great difficulty. The Murghab valley widens very considerably at Maruchak, where it is two or three miles across. Much of the ground adjoining the river is low and swampy, and covered with a thick tangle of high reeds and grass. Wherever there are reeds and grass in this country there wild pig abounds, and there too are to be found pheasants in numbers that can only be seen elsewhere in a very well preserved covert in England. The road to Bala Murghab crosses the river at Maruchak, and follows the right bank to Karaol Khana and Bala Murghab. Existing maps of this part of the country are very erroneous. The total distance between Penjdeh and Bala Murghab is about 41 miles, and both these places are at present shown far to the west of their correct position in longitude. Bala Murghab fort is now in a state of good preservation; the camp being a little to the north of it on the same bank of the river, and the fort occupied by the Amir's troops. The direct road to Maimana leaves the valley about two miles north of the fort. Another route, probably equally good, but which does not touch Bala Murghab, is by the Chaba Shamba river which joins the Murghab at Karaol Khana.* Bala Murghab can thus hardly be said to command the Maimana road. Grodekoff's route again is south of Bala Murghab, along the foot of the Tirband-i-Turkistan (which possesses a variety of local names), and is not a recognised route for traffic at all. The Tirband-i-Turkistan is a distinct range, although an offshoot from the great system of mountains which culminate about longitude $66^{\circ} 30'$. To the south it shelves down to the Murghab basin in cliffs and precipices. To the north it sends out long flattish spurs, up which many a rideable track can be found. A few days before Christmas the rather unusual sight of a mounted party in pursuit of ibex and wild sheep might

* I have very little doubt that Bala Murghab and not Maruchak will be identified as the *Merv Rud* of the old Arab geographers.

have been seen on the very crest of the mountain, which (so far as at present fixed) runs to about 9000 or 10,000 feet above sea-level. Beyond the Tirband southward a magnificent view is obtained of the Ferozkhoi country, which appears to comprise the whole Murghab basin. Northward the rolling sand dunes slope away to the far horizon in endless smooth-topped waves. It is one of the most remarkable panoramas I have ever seen.

In introducing the subject of the evening,

The PRESIDENT said that both Major Holdich and General Walker were well known to the members of the Society. They were already indebted to Major Holdich for several most interesting papers, one of which he read himself before the Society. He was engaged during the whole of the late warlike expeditions in Afghanistan, where he saw a great deal, and what he saw he was able to describe with singularly graphic power and fidelity. He was now employed upon the Commission for settling the boundaries between Afghanistan and the Russian territory. He had served as an officer in the Great Survey of India under General Walker, than whom there was no more competent authority with regard to the geography of that district. Major Holdich's recent observations showed that many geographical positions which were assumed to be correct were very incorrect; that there existed a good deal of doubt with regard to matters which persons who had not entered so carefully into the subject as he had done had been apt to treat as not doubtful; and that in fact our maps were misleading upon many points. The country about Herat was one of singular historical as well as geographical interest. Herat was one of the most important of the numerous cities that were called after that wonderful conqueror Alexander the Great. There seemed little doubt that Alexandria in Ariis occupied the site of the modern Herat, and that the valleys there once teemed with population, and were filled with towns of great size and wealth. The name of the district also was interesting to us from its supposed association with the Aryan race. When the primitive tribes of that race descended from the higher mountain valleys to the fertile river plains, the plain around Herat was probably one of the first which they peopled and where they increased in numbers and importance. Down to very recent times the country was richly cultivated and inhabited by people collected in great towns. They had been replaced by wild hordes, including in their numbers some of the most savage tribes that ever desolated a fertile region. Papers had been read before the Society by Colonel C. E. Stewart, the late Mr. O'Donovan, and others, describing the present inhabitants. However, interest was now centred upon the question of the geographical limits of the country and the settlement of the point as to what belonged to the Turkomans conquered by the Russians, and what belonged to the Afghans. The Society simply looked at these matters with a desire for information, and he was sure they would listen to the paper and discussion utterly undisturbed by any political passions. If they would otherwise have been inclined to show partisanship, they would be restrained from doing so because they have the pleasure of having amongst them that evening as their guest M. Lessar, who knew the country so well. He appeared in England as the representative and the advocate of the interests of his own country, Russia, and as such they would all listen to him with respect. The Geographical Society had repeatedly received from him most valuable information which was always given with the utmost courtesy and readiness.

After the paper,

General WALKER said:—As our President and other gentlemen will probably address you on the subject of the interesting paper which I have just read, I will

make no comment on it further than to explain that the inaccuracies which Major Holdich and his officers have discovered in all the hitherto published maps of the regions north of Herat, including the map of Turkistan, of which six editions have been published in India under my direction and responsibility, are simply due to the circumstance that the existing geographical materials were altogether inadequate for the construction of a correct map. The evidence on which positions were assigned to various places was often mainly conjectural; thus we now know from actual survey that the position of Penjdeh relatively to Herat is about 5½ miles closer in latitude and 10 miles further in longitude than the Turkistan map indicates; also that the fort of Maruchak is three miles further in latitude and no less than 22½ miles in longitude, and that Bala Murghab is six miles further in latitude and 11 in longitude. These are three of the most important places on the Afghan frontier, and are all in one district, so that the magnitude of the errors in their relative positions *inter se* is all the more remarkable. But the errors have not been geographical only; there would seem to be as much ignorance of the people themselves as of the country they inhabit. For we find M. Lessar, the Russo-Afghan Boundary Commissioner who is now in London, and who honours us by his presence at this meeting, giving a character to the Sarik Turkomans generally which is quite at variance with the character given by Major Holdich to an important branch of that tribe, the Sariks of Penjdeh in Afghanistan, who appear to be a special bone of contention at the present moment. M. Lessar is reported by the newspapers to have said that the Russians "have not attempted to unite all Turkomans, but only to bring under their power the Sariks, not because they are Turkomans, but because they are robbers." Now though this is, doubtless, quite true of certain of the Sariks, it can scarcely be true of the Sariks of Penjdeh, of whom Major Holdich tells us that "the entire absence of arms amongst them was a noticeable feature, particularly when taken in connection with their dexterity with their triangular spades; they are distinctly agricultural in their tendencies, and not military." These men surely deserve to be regarded as something better than robbers. M. Lessar's patriotic advocacy of his country's claims may well win the admiration of all Englishmen. But instances like the present show that Englishmen may justly question the validity of those claims. Thus it should be apparent, as I have already maintained elsewhere, that maps constructed with very imperfect geographical materials and with very little knowledge of the people of the country, cannot be expected to give accurate delineations of the boundary lines of different States, more especially when the States themselves have not been consulted as to their respective territorial claims; therefore, for the true delineation of the northern Afghan frontier line we must wait until the labours of the Boundary Commissioners and the Survey officers are completed.

The Secretary, Mr. C. R. MARKHAM, then read the following observations on the paper written by M. LESSAR:—

The diversity of opinion on the question what part of the country should be named Badghis is of quite recent date (from 1883). During my travels I was always told by neighbouring inhabitants that the name is applied to the hilly country between the Upper Murghab and the Khushk. This is confirmed by Captain James Abbott, who travelled in these parts in 1839. He went to the north from the village of Khushk through Chaman-i-bed, and near this last point, he says, ends the country named Badghis, and further on the place is named Maour, and at Kalei Maour the kingdom of Kharezm begins. It was also thus that Badghis was indicated in maps before 1883. Furthermore it is confirmed also by the ancient descriptions of the Badghis, "it is full of timber and trees;" that is quite true speaking of the northern slope of the Paropamisus; but nobody certainly will name woody the country

between the Khushk and the Hari-rud, where only rarely, and at great distances apart, are isolated pistachio-trees met with. Thus the opinion of the local authorities, of whom Major Holdich speaks, appears to be the true one. The region between Khushk and the Hari-rud by the neighbouring tribes is simply called Tchull (desert), and probably the absence of a separate, definite name is the reason why in Europe the name of Badghis was applied to the whole country. Owing to the very different character of the two parts of it, this confusion leads to many misunderstandings; all that is said of the richness of Badghis is applied very erroneously to the Tchull. Major Holdich says: "A description of one of these Badghis valleys might almost serve for all. The water supply is ample, and the possibilities of irrigation and cultivation abundant. The soil is excellent."—&c. These words, which can be applied only to places between the Murghab and the Khushk, led to the error of believing in the richness of the country between the last river and the Hari-rud. In Central Asia the richness of a country depends principally upon the abundance of water for irrigation. A very indifferent soil, where water is abundant and good, gives rich crops; while on the contrary, the best soil without water produces nothing. In the latter case the best thing is a soil with a great predominance of sand, which is not at all available for cultivation but produces rich pasturage. Generally not only between the Khushk and the Hari-rud, but in the whole Transcaspian Territory, the most part of the country, not covered with sand, consists of sandstone-clay—a soil very propitious for cultivation; but nevertheless the country is very poor, owing to the scarcity and often to the complete absence of water. In this respect the country between the Khushk and the Hari-rud is in a very bad condition. On the north of the Barkut Mountains (or Paropamisus) only the valleys of the Khushk, the Murghab, and Hari-rud are cultivable in the places where the height of the banks permits of bringing the water for irrigation. Such places are frequent on the Khushk and the Murghab, but along the Hari-rud, on the contrary, they are very rare. But as to the country between the two rivers, on the north of latitude $35^{\circ} 20'$, only at Kerizi-Elias is there a small rivulet with water sufficient for the irrigation of a small garden or field; in all other places the water in wells or rivulets is quite insufficient and in many cases contains salt; such water, even when it is good enough for shepherds and their flocks, is not available for cultivation. In some streams (e. g. Dahna Islam, which the Tekkeh name also Egri-Geuk) the water is completely brackish and not drinkable even for flocks. A glance at the map is sufficient to show that no irrigation works can bring water to the middle part between the rivers. Without exaggeration it may be said that all that part is not available for cultivation. The more northern part, from latitude $35^{\circ} 40'$ near the Elbeerin Kir (where sand predominates in the composition of soil) presents very good pasturage.

M. LESSAR added the following remarks (speaking in French):—It seems to me that there reigns a confusion in respect to the maps: only maps accompanying treaties as their explanation, can serve as documents for delimitation. The other, even if made by official departments, cannot have the same significance in this respect. They are compiled from sources of different value, from the most careful instrumental surveys to simple reconnaissances. It is with the latter that one must be contented for little known and accessible countries in order not to leave blank spaces on the maps. General Walker speaks of the coincidence of the frontier on Russian maps with the one on his map, as proving that the Russians being aware of the claims of the Turkomans, accepted General Walker's view of the Afghan frontier. I cannot agree with that: the country was unknown, and probably this part was simply copied from General Walker's map, which had the reputation of being one of the best maps of Turkistan, without agreeing by that fact

with any view at all. Many parts of General Walker's map are compiled from Russian sources. Before the fall of Geuk-Tepch, and even the occupation of Merv, we could have very little knowledge of the claims of Turkomans in these regions; only quite lately began the surveying of the country, and from that time our maps largely differ from General Walker's. The permanent frontier between Turkomania and Afghanistan ought certainly to be defined according to the mutual rights of both parties, and not on the basis of a fancy line drawn on a map previous to the study of the country.—The third remark refers to the character of the Sariks: Major Holdich says that they are a pleasant, friendly lot of people, and I described the Sariks as robbers. I think that we both are right; I spoke of this tribe before the occupation of Merv, and in that time the Sariks were certainly robbers, all descriptions agree upon that. Major Holdich speaks of the Sariks as they are after the pacification of the desert by the Russians, and in the presence of an English detachment in their neighbourhood; the difference proves only how important it is to make the pacification definitive.

Sir HENRY RAWLINSON said he had no personal acquaintance with the country now under discussion. Although he had approached Herat on both sides, he had never actually crossed or reached either the Hari-rud or the Murghab. His acquaintance with the subject had been derived mainly from books and study, as well as from inquiry among the inhabitants, having been for a year or so in charge of our political relations with Herat after the retirement of Major D'Arcy Todd from the city in 1841. In the capacity of an actual observer he entirely yielded to M. Lessar, who he believed was the first European to perambulate the large district of Badghis. He himself had always taken a great interest in the region in question, not merely on political grounds, but because Herat and the neighbouring country had occupied a very prominent place in Oriental history, both ancient and modern. It was especially from the geographical point of view that he had pursued his studies with regard to it. This was hardly perhaps the place or occasion on which to enter upon learned discussion on questions of etymology or ancient geography or ethnography, but still he could not help alluding to such subjects in the few remarks that he was about to make. The desert character of a portion of the region east of the Hari-rud, to which M. Lessar had devoted special notice, had always been a subject of interest. The description M. Lessar had given of it exactly corresponded with the account which he had himself derived from Persian and Arabic authors. At the same time, he could not agree with M. Lessar in limiting the application of the term of Badghis to merely the valley of the Kushk, that is, to the eastern and fertile portion of the district, for the Arab geographers, the great authorities whom all scholars followed, had given very copious descriptions of Badghis, both in its desert and its fertile character. They enumerated, for instance, ten or twelve places of habitation in the country, and out of the whole list there were only two or three which were credited with running water. All the others were said to derive their supply of water from wells and underground aqueducts. That was the distinguishing physical feature of Northern and Western Badghis, and it exactly answered the description which M. Lessar, from personal observation, first gave of it, and which was confirmed by Sir Peter Lumsden's party, who were now surveying the district. The eastern and southern portions of the country along the slopes of the Paropamisus range and along the Kushk river, were, on the contrary, exceptionally fertile. It was that particular region which was extravagantly extolled by Oriental writers as being in the spring a flower-garden of beauty and a treasure-house of delights. They stated specifically that Badghis was the only country in the East which could supply a thousand different encampments for an army—a thousand valleys, in each of which a camp might be pitched, perfectly well supplied with fuel,

fodder, grass, and water, and they added that such a state of things could not be found in any other region in the East with which they were acquainted; in fact, the rich herbage, luxuriant pastures, and forests of pistachio-trees of Badghis were celebrated throughout the world. Without attempting to enter at any length upon the ancient history of the country, he would now say a few words on the subject which really were of some interest. With that fondness for punning etymology for which they were famous, the Persians pretended that Badghis owed its name to the gales of wind that were prevalent there, the word meaning "raising a hurricane," but this derivation was only partly true. There was an important Pehlevi work not very much known, which was a most valuable repertory of the old traditions of the country; it was called the *Bundelesh*, and was certainly compiled before the Arab conquest—probably in the fourth or fifth century. It contained, moreover, especially curious notices of the districts of Khorassan. Now, it was there stated that Badghis derived its name from the tribe or colony called the *Vad-Keshan*, which meant "wind-worshippers," and as it was known from the coins of the Kushan or Tokhari that those tribes did worship the wind, it might well be supposed that that was the true derivation of the word. The tribes in question were commonly called *White Huns*, and came into the country before the fourth or fifth century of Christ. Their capital was *Tálikán*, about 30 or 40 miles east of the modern *Maruchak*, and Badghis was their strong place. Oriental geographers always connected Badghis with *Baghshur* or *Bag-eshwar*, which was the capital of that division of the country and is represented by the modern *Kileh-Maur*. Further south, near *Gulrán*, was *Dahistán*, the country of the *Dahæ*. He believed that name was now entirely lost in the country. The governor was said to have lived in another city called *Kughanabád*, but there was no clue to its site.—He would now attempt to identify some of the places that had been visited by *M. Lessar*, and the officers serving with the British Commission. *Kara Tepeh* was the ancient *Bavan* or *Baban*, the capital of *Ganj Rusták*, which was the south-eastern portion of Badghis. The measurement from *Herat* proved its identity. Then *Kileh-Maur* was *Baghshur*. *Ak Tepeh* was, perhaps, the famous *Merv-er-rúd*,* which was only inferior to *Merv*, and the modern *Maruchak* seemed to answer to the *Marsak* of the geographers, which was half-way between *Merv-er-rúd* and *Abshín*. This latter place, now called *Bala Murghab*, was the capital of one of the most interesting principalities in all Oriental history. The principality was named *Gharshistan*, and was governed by a family that had the title of *Shar*. The *Shars* of *Gharshistan* were one of the most famous historical groups in antiquity. The king lived in the city of *Bala-Murghab* or *Abshín*, and his people not only obtained very great power, but reached an extraordinary degree of civilisation. When the Arabs first became acquainted with them they were astonished to find in the middle of what they supposed to be a barbarous mass of mountains a higher state of learning and civilisation than they had left at *Baghdad*. The *Shar Abu Nasr*, indeed, who died at *Ghazni* in A.H. 401, was notoriously one of the best Arabic scholars of the age. The whole story of *Gharshistan* was so curious that fifty years ago *M. de Sacy* wrote a special memoir upon it, which was to be found in the first volume of the '*Mines de l'Orient*.' At that time the site of the place even was unknown, and it attracted but little notice, but now, fifty years afterwards, the British Frontier Com-

* The exact position of *Merv-er-rúd* is still undecided. *Sir P. Lumsden's* officers suggest *Bala Murghab* or the immediate neighbourhood, but that is impossible. *Merv-er-rúd* was certainly close to *Penjdeh*, and to the south, I think, rather than to the north. I should place it about five miles lower down the river than *Band-i-Nadir*, but must reserve my arguments for a special paper on the subject.—H. C. R.

mission actually had its winter quarters on that very site, and were living around the old palace of the Shars.

He now proposed to say a few words about the Sariks. The character given of them by Major Holdich and other members of the Commission, was very different from that which had generally been attached to them, and which the Russian officers had especially brought to notice. M. Lessar recently repudiated the idea that it was the desire of the Russian Government to annex the Sariks of Penjdeh because they were of the same race as those of Yol-atan, who were already Russian subjects, but rather for the purpose of reclaiming them from brigandage, and he now explained that they had apparently altered their character since the Russian occupation of Merv. If this explanation were true, if in the course of a year the Sariks had felt the influence of Russian civilisation so much as to have entirely altered their character, it was a very remarkable ethnographical fact. From official documents he had hitherto always understood that the claim which Russia had put forward to the Sariks was founded on the fact that a division of the tribe had voluntarily tendered their allegiance, which on the ground of ethnographical unity required that all the divisions of the race should follow the same course; that is, that if the Sariks of Yol-atan were Russian subjects the Sariks of Penjdeh ought to be so also; but the faulty point in this argument was that the former voluntarily submitted, whilst the latter refused submission. If the Sariks of Penjdeh chose to submit to Russia they might have the privilege of doing so, but until they did make such an election they were entitled to remain on Afghan lands, and to be treated as Afghan subjects. He entirely repudiated the principle of ethnographical unity with regard to the Turkomans. Half of the Yemuts, for instance, belonged to Persia, while half were Russian: of the Ersari some were independent and some had proffered their allegiance to Bokhara: some of the Salors, again, the other day tendered their allegiance to Persia, whilst others were attached to Khiva. The Turkomans, indeed, extended as far as Constantinople: Asia Minor was full of Turkomans, and these latter were not recent emigrants but had been there for the last 500 years. Originally the Turkomans were a tribe which came from the east into Khorassan with the Seljukians, or before them. They were then called Ghuz. They overran Persia and spread into Syria and Asia Minor. Ultimately the greater part of them took to the desert between the Persian mountains and the north-eastern shores of the Caspian, and there they had remained until recent years. Their appearance in the southern part of the desert was comparatively recent. The Tekkes only came to Merv about thirty years ago, the Sariks at the same time moving from Merv to Penjdeh, where they had settled and paid tribute to Persia ever since. However, this was a digression and did not refer especially to the subject of discussion, so that he would not pursue it further.

The PRESIDENT asked Sir Henry Rawlinson if he would point out distinctly on the map what, according to his views, were the claims of Russia and what were those of Afghanistan?

Sir HENRY RAWLINSON said the general distribution of territory between the two Governments of Russia and England followed a certain political arrangement which was made in the year 1872, in virtue of a diplomatic correspondence between the two countries. That agreement drew the frontier of Afghanistan along the Oxus as far as Khoja Saleh, but from that point it gave no direct line, merely stating a general distinction between the Turkoman desert on one side and the hilly Persian districts on the other. Unfortunately it did not define the point at which the line would cross the Murghab, but the inference from the general distribution of hill and plain certainly placed Penjdeh in the southern or Afghan division. According to the same principle, the line would reach the Hari-rud somewhere about

Sarrakhs; in fact when the present negotiations were originated, for the purpose of defining the line and complementing the old arrangement, it was assumed by all parties, and especially by the Russian Foreign Office, that Sarrakhs was to be the western point of departure. He should say that the line ought to run from Sarrakhs or somewhere in the neighbourhood, and should be prolonged as directly as possible from that point to the Oxus at Khoja Saleh.

The PRESIDENT said that in the delightful travels of Major Abbott it was stated that he started from Herat to go to Merv, and had a profound distrust of the Governor of Herat. He was accompanied by a man whom he thought was a dangerous person, and when he got to Penjdeh he said to him, "I am now entering upon the territory of Khiva, leaving, in fact, the territory of Herat," and he sent him back again, to the man's intense disgust. If that were the territory of Khiva, would that fact tell on either side?

Sir HENRY RAWLINSON replied that it did not, because the notice referred to an exceptional period. At the time of Major Abbott's visit the Khan of Khiva had made an irruption into the country to the south, and for two or three years he exercised sovereignty over a considerable part of Afghan territory reaching as far as Kila-Maur. Immediately, however, the Khivans retired, the Afghans resumed possession. M. Lessar contested, it seemed, the application of the term Badghis to such a large extent of territory, but he could not agree with him. A most valuable authority, Hafiz Abrú, an accomplished minister of Shah Rukh, the son of the great Timour, who brought Badghis and Herat to its highest state of prosperity, had written in about A.H. 820 an elaborate history of Khorassan and Herat, treating his subject geographically, historically, and statistically. A copy of that manuscript was given to him (Sir Henry Rawlinson) forty years ago by Yar Mahommed Khan, the famous Vizier of Shah Kamran of Herat, and it was now in the British Museum. Hafiz Abrú distinctly described the boundaries of Badghis, stating that on the west it was bounded by the Persian districts of Jám and Sarrakhs, so that it must have extended from Khusan right up to Sarrakhs. He had read almost all the authorities from the time of the Arab conquest to the present day, but he had never met with any local authority who had attempted to confine Badghis to the south-eastern corner of the district after the fashion of M. Lessar. In all Oriental countries frontiers were elastic and fluctuating, but there was usually a recognised normal distribution, and he defied anybody to question that the normal distribution of territory in Badghis was to extend the frontier as far north as Sarrakhs, or at any rate between Pul-i-Khatun and Sarrakhs. If there was to be any fresh distribution it would be entirely a new departure, for which, as far as he could see, there was no political necessity. He felt convinced that if M. Lessar and himself were to sit down and argue the question on a purely geographical basis, they would agree as to the northern limits of Badghis, which were, in fact, the limits of Turkomania and Afghanistan. He was certain that the geographical evidence was so strong that any fair-minded man like M. Lessar could not resist it, but of course there might be questions of political expediency which overruled all other considerations, and upon that subject he would not presume to say anything.

Sir RICHARD TEMPLE said the subject was so much involved with political considerations that he could only venture to put one or two geographical questions. It would be very interesting if General Walker would kindly explain what Major Holdich meant by saying that Herat was "commanded on all sides." In a military sense the term meant that there were hills in the neighbourhood of the city upon which modern artillery could be placed. Would General Walker state how those hills were situated and what was their position in reference to the city? Perhaps if General Walker hesitated to do so, Sir Henry Rawlinson would kindly

explain it. He wished to bear his testimony in corroboration of what Sir Henry Rawlinson had said in his most interesting and practical remarks regarding the boundary. He was a member of the Government of India when that boundary was settled, and nothing could be more explicit than the understanding that it ran from Sarrakhs on one side to Khoja-Saleh on the Oxus, and that the line was to be drawn as straight as an arrow. He would like to know whether the important position Ak Tépeh was on the Afghan side of that line or not. He also wished to know what was the exact distance from the nearest point on that line between Sarrakhs and Khoja-Saleh and Herat. He had listened with great satisfaction to what Sir Henry Rawlinson had said regarding the boundaries of the old province of Badghis, and he presumed that according to Sir Henry the whole of that territory fell within the line, but it would be satisfactory if he would state so explicitly, especially as such an interesting description had been given of the fertility and resources of the district. He expressed his extreme satisfaction at finding that the political geography of that country was attracting so much public attention. He was himself a politician first and a geographer afterwards, and he hoped that all Englishmen were patriots above all things else; but a knowledge of accurate geography such as evidently was possessed by M. Lessar was more common in the Russian service than in the English service. It was Englishmen's ignorance regarding the lie of the ground, the relative positions of places, and the importance of certain lines of communication, which caused the apathy in respect to political consequences that frequently placed England at a great disadvantage. If the Geographical Society succeeded in disseminating information and in arousing public interest with regard to this matter it would achieve an important national purpose.

Sir HENRY RAWLINSON, in reply, said that forty years ago Herat was surveyed accurately, minutely, and scientifically, by a most accomplished officer of the Bengal Engineers, Major Sanders, who drew up an elaborate report upon it. Since then it had been examined by many other officers, Russians and French, such as General Ferrier, M. Khanikoff, General Grodekoff, &c., and they had all left it on record that there were two elevated positions to the north of Herat, called Tel-i-Banghi and Mosellá, which commanded the city, and they had all moreover agreed that unless outworks or detached forts were erected on those two spots, Herat was untenable against a European army, but that with those posts connected with the city, it was one of the strongest positions possible. When Major Holdich said it was "commanded on all sides," he presumed that was a mere *façon de parler*, because there was nothing, as far as he knew, on the southern side that dominated Herat in any way. The northern hills were not above the height of the top of the citadel, but they would enable an enemy to send a plunging fire into the city and especially into the cistern which contained the water necessary for the garrison. With regard to Badghis, the western boundary was certainly the Hari-rud, but the northern boundary was one of those doubtful matters which the Commission were supposed to have instructions to settle. Any line from Khoja Saleh to the neighbourhood of Sarrakhs, unless it made a great deflection to the south, would certainly include in Afghanistan the Salt Lake and all those pastures which it was now proposed to make over to the Turkomans, and it would further run considerably to the north of Ak Tépeh and Penjdeh and Pul-i-khishti, skirting the hills north of Maimaneh to the Oxus. There was one other point which it might be as well to mention, because M. Lessar had attached some importance to it, and so long as it remained a standard article of belief it confused the subject very much. It was generally supposed that the present question of frontier depended very much on the extent of the country possessed by Dost Mahomed Khan and his successor Shere Ali. Such a reservation did govern the original agreement, but it was subsequently officially withdrawn by

Prince Gortschakoff, and there was no question of "*uti possidetis*" in the terms as finally agreed upon. The principle which it was decided should govern the distribution, was the distinction of hill and plain, or the boundaries of the "dependencies of Herat," and any court of law that had to examine the question would assuredly decide that Badghis from all antiquity had been a dependency of Herat, and as a dependency of Herat it undoubtedly came within the Afghan limit of territory.

In answer to a further question by Sir RICHARD TEMPLE as to how many miles it was from Penjdeh to Ak Tepeh; Sir HENRY RAWLINSON said the distance was five miles, and from Ak Tepeh to Pul-i-khishti was half a mile.

M. LESSAR then again addressed the meeting (speaking in French):—He thanked the President for the permission not to speak on political matters, and wished only to explain that his silence did not in any way mean his agreement with the political opinions expressed during the meeting. Returning once more to the character of the Sarika, he must say that his words were misunderstood; the Russians certainly do not boast of having in one year civilised the Turkomans. They claim to have pacified the desert, abolished the slave trade, and made it possible for the surrounding countries to live in peace. To this end it was necessary to subdue and chastise the Turkomans, and it is fear, and not the civilisation of their character, which produces this change in their conduct.

The PRESIDENT proposed a hearty vote of thanks to Major Holdich, and in doing so, said he thought they might depart from the usual plan and extend it to M. Lessar, who had kindly attended and added so much to the interest of the discussion, and to Sir Henry Rawlinson, who had so patiently submitted to the cross-fire from the chair and from Sir Richard Temple. It would be utterly presumptuous on his part if he were to attempt to speak authoritatively on any of these questions, but he must vindicate English geographers against the somewhat harsh judgment passed upon them by Sir Richard Temple. The Russian maps followed closely the map drawn by General Walker and his department, and it was only when the Russians came to close quarters with the country and saw that the boundary was one which would be inconvenient to both parties, that they thought it necessary to depart from it. The Russians had thus followed the English. But even if the best knowledge of the country had not been furnished by Englishmen, it must be remembered that the Russians had steadily advanced from west to east, clearing up all sorts of geographical problems as they went along; while between India and the territory was Afghanistan, jealous beyond measure of foreigners, and Englishmen for the most part had only been able to obtain information while attacking or defending Afghanistan. Still, up to the present time, our travellers had furnished the only existing authority for the map of that portion of Western Afghanistan.

The resolution was carried unanimously.

The Irawadi River. By ROBERT GORDON, C.E.

(Read at the Evening Meeting, March 9th, 1885.)

Maps, p. 352.

THE purely geographical question as to the sources of the Irawadi river takes an undue prominence in comparison with other questions of high practical import relating to the same regions. The peninsula of Indo-China is as compact and as well-defined an area as that of either India or China from which it has to borrow its name, but its peoples and