REPORT

ON THE

OCCUPATION OF THE LOGAR VALLEY

FROM

APRIL TO AUGUST 1880.

BY

MAJOR C. B. ELTAN SMITH, C.S.I.,

POLITICAL OFFICER.

CALCUTTA:
PRINTED AT THE FOREIGN DEPARTMENT PRESS.
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Dated Simla, 26th October 1880.

From—MAJOR C. B. EUAN SMITH, C.S.I., Political Officer,

To—Offg. Secy. to the Govt. of India, Foreign Dept.

I HAVE the honor herewith to submit, for the information of the Government of India, a brief report drawn up by me on our occupation of the Logar Valley from April to August 1880, which stress of work has prevented me completing until now.

2. I have the honor also to submit at the same time a somewhat lengthy memorandum drawn up by Surgeon-Major Johnston of the 3rd Goorkha Regiment, in compliance with a request which I made to him that he would afford me such information as he possessed concerning the fauna and flora of the valley, and which I intended to incorporate with my report. The memorandum now submitted by Surgeon-Major Johnston is, however, complete in itself, and I have thought it best to submit it separately.

3. The sketches of Afghan character by which it is accompanied are by Lieutenant Pulley of the 3rd Goorkhas.

BRIEF DESCRIPTION OF THE VALLEY.

THE Logar Valley may be roughly described as extending from Amir-i-Killa in the south to Safed Sang in the north, and, for convenience sake, might be nominally divided into three portions :—

I.—*The Upper Logar*, extending from Amir Killa to the other side of the pass lying between Mir Syadan and Hissarak, called Tangi-Hissarak. This is by far the most populous and prosperous part of the valley, containing as it does the very large and flourishing groups of villages known respectively as Barak-i-Rajan, Barak-i-Barak, Patkao-i-Rojani, and Patkao-Shanah, under one of which names almost every one of the villages enclosed within the great area of cultivated and irrigated land is grouped for revenue purposes, and it is this portion of the valley that may be looked upon as constituting the real granary of Kabul.

II.—*The Middle Logar*, extending from Tangi-Hissarak inclusive of the Tangi-Wazghan. This portion of the district is much more sparsely populated and cultivated. The villages and cultivation lie almost exclusively along the banks of the river, and the irrigation canals are much fewer and less extensive than in the Upper Logar. The principal groups of villages are Hissarak, Kulangar, and Dadur Khel.

III.—*The Northern Logar*, comprising from the Tangi-i-Wazghan to the Safed Sang Pass at the entrance to the Charasia district near Kabul. This portion of the valley is thickly cultivated on both sides of the river, but is quite barren at a short distance from the bed of the stream. Its principal districts are Deh-Nao, Muhammad Aga, Gumran, Zahidabad, Kuti Khel, and Zarghunshahr, the last named being situated four miles from the right bank of the river, and entirely dependent for its water-supply on karezes that have been dug from the district of Surkhao to the east.

On every side Logar is completely shut in by high barren hills with passes leading to the south and south-east into Kharwar, Zurmat, and Musai, and on the west and south-west into Wardak, Maidan, and Chardeh. Two excellent bridle roads traverse the valley on both sides of the river, which latter is moreover fordable at almost all points owing to the quantity of water that is diverted into the irrigation canals.

The three principal outlying districts of Logar are *Surkhai*, the district belonging to the Ghilzai Chief, Padshah Khan, situated seven miles to the east of Zarghunshahr; *Kushi*, an exceedingly prosperous Tajik district, situated some ten miles east of Hissarak and near the entrance to the Shuturgardan Pass, of which Rahmatulla Khan, the head Malik, is a staunch friend of the English; and *Charakh*, situated some twelve miles south-east of Barak-i-Rajan, and through which passes the road leading into Kharwar, and which has been noticed in another part of this memorandum.

With the exception of these three districts the cultivation in Logar is continuous, and the villages are closely situated one to another. During the ripening of the harvest the Upper Logar presents to the eye an immense unbroken surface of waving corn. Where the cultivation ceases, the desert commences on either side of the river and continues so right up to the hills.

The sketch map, which is herewith attached, was kindly furnished to me by Mr. Ogle, of the Survey Department, and will sufficiently illustrate the main features of the valley, of the principal villages, of which a list is also enclosed, marked A.

Land tenure.—There are three classes of land in Logar, depending partly on the water available for irrigation, and partly on the ability or otherwise of the owners to manure the ground; fields which lie at a distance from villages not being supposed to be manured at all. The Tajiks, Kazzilbashes, and other Farsiwans are taxed at an extraordinary disadvantage to their Afghan neighbours. On land of the best class, the rate fixed is from twelve to twenty-two seers Kabuli per jereeb, the general rate being fifteen seers. Land of the average sort pays eight seers, and of the worst description five seers. A Kabuli seer weighs, roughly speaking, 16 lbs., and a jereeb (in Logar) consists of twenty biswas, a

biswa being a plot of ground twenty paces square. These paces are, however, short, and the biswa may be calculated as fifteen yards square. The jereeb is accordingly found to be 4,500 superficial yards, or about a quarter of a rood less than an English acre. Reduced therefore to English weights and measures, it will be seen that first class land pays an average of 2¼ cwt. per acre, second class land rather more than half that amount, and the worst land a third of it. First class land of the above description will yield, if well cultivated (and the cultivation in Logar is extremely good), about twenty-four maunds per jereeb. This gives the rate of taxation of such land to be about 12½ per cent. of the produce, which does not appear to be excessive. But it is only the classes above-named who pay these rates; Afghans according to a land settlement of a very old date, known as Kalandar Khan's settlement, pay but 1¼ Kabuli seers per jereeb, *i.e.*, less than 22 lbs. per English acre, though land purchased by them from Farsiwans is assessed at the rates paid by the latter. It may be imagined how greatly this difference of taxation affects the value of land in Logar, and how it tends to keep up that feeling of superiority which the Afghans claim to exercise over their less powerful neighbours. Many attempts have been made to equalise the taxation by raising the rates paid by the Ghilzais, but no Amir has as yet been powerful enough to do this, and it need hardly be said the Farsiwans and others cannot get their taxes reduced.

Rotation of crops.—First class land is cultivated every year, that of the second class every second year, while the worst description is allowed to lie fallow or under clover for two years. The rotation of crops on the best land is as follows: barley or wheat is sown from the middle of August to the beginning of November, and reaped in June and July; clover seed is then sown, which is grazed down by cattle late in autumn. It grows up again the following spring, and is cut once or twice. In May or June the land is ploughed for rice or Indian-corn, which are fit for cutting in September or October. After the land has been well manured wheat is again sown.

If the land be poor, the clover is allowed to grow for three or four cuttings, *i.e.*, till the autumn, when the ground is ploughed for wheat or barley sowing.

Rice is sown broadcast and allowed to grow where it springs: it is not transplanted by hand as in Kuram and Khost, though a thick crop may occasionally be thinned.

Fodder for cattle.—In an ordinary winter snow does not lie on the ground in Logar for more than ten days; should it remain for three weeks the season is called extremely severe. At such times the scarcity of fodder for cattle is so great that bhoosa has been known to sell for its weight in grain. Besides bhoosa, dry clover and lucerne and a thorny shrub called gowan, which grows on the low hills, are used as winter fodder for cattle, and camel-thorn for sheep and goats when snow prevents their grazing. Both the camel-thorn and gowan require to be beaten small before animals are fed on them.

Health.—The Logar Valley appears to be on the whole healthy, though deaths are common in the late summer months and autumn from remittent fever, the worst form of which is called in Pushtu "chakai,"

and in Persian "damana." Natives say that it is accompanied by extreme pain in the back and limbs. On the fourth day the patient generally becomes insensible. If perspiration cannot be induced by the seventh to the ninth day, the disease generally proves fatal. Diseases of the eye and small-pox are also common. Cholera appears every two or three years. Last year it made great ravages, commencing early in May; it lasted till late in September, and was of a very severe type. Many of the older residents are skilled in dressing wounds, and have a slight knowledge of the properties (or supposed properties) of certain herbs and drugs, but there is no one in the valley whose sole profession is that of a doctor. If such a man is required, he has to be brought from Kabul.

Prices.—In ordinary times wheat is sold in Logar at from twenty to twenty-four seers English per rupee Kabuli; barley and Indian-corn at about thirty-five seers English. The high prices prevalent owing to the presence of the English army were however equalled in 1867-68 during the civil war, consequent on the struggles of Muhammad Afzal Khan and Sher Ali Khan for the throne.

Land, wood, cattle, grain, &c., are all paid for in cash; the sole exception seems to be in the purchase of dried mulberries, for which equal weight of wheat or double the weight of other grain is ordinarily given.

Irrigation.—The distribution of the water-supply for purposes of irrigation is, as elsewhere, a frequent source of strife. The period to which each village community is entitled to the flow of the river water-course or of the stream from the karez has been handed down traditionally from generation to generation, so that the authors of the distribution have been quite forgotten. Disputes on the subject are usually settled either by the Hakim in person, or by some one deputed by him.

Tribes.—On the whole, however, the residents of Logar appear to live in tolerable harmony with each other, not from a community of feeling, but because the Afghans (Stankizai, Ahmedzai, and Adramzai Ghilzais) are more powerful than the Farsiwans, who are Tajiks, Hazaras, and Kazzilbashes. The Tajiks of Kushi are mostly Shiahs, but Kushi is somewhat isolated, and the inhabitants keep to themselves.

There are about 150 Hindu families in Logar, *viz.*, 100 in Barak-i-Rajan, about thirty families in Charakh, and a few scattered about Amir Killa, Kulangar, Gumran, &c. These men do not appear to be much oppressed by their Muhammadan brethren. They are, generally speaking, rich, and are very useful as money-lenders, their charges for such accommodation being usually 20 per cent. per annum.

Slavery.—Slavery is unknown in Logar.

Political summary.—The Kandahar Field Force marched into Logar on the 30th April 1880 in two brigades. One brigade with the guns and heavy artillery moved from Saidabad by the Zumboorak Pass, on which the Sappers had been engaged for some days to make it practicable for artillery, and the other brigade marched from Shaikabad by the more direct road through the Tangi Wardak. The march was accomplished without accident, and the two brigades encamped for the night at Amir Killa and Barak-i-Barak, respectively. From thence they moved down

by easy marches, and established permanent camps at Killa Jabir and Hissarak, the head-quarters of the division with General Hughes in command being established at the latter place. At this time Major Clifford was officiating as Political Officer with the force in the place of Major Euan Smith, C.S.I., who had proceeded to Kabul with Sir Donald Stewart. Major Lance, of the 2nd Punjab Cavalry, was the Acting Political Officer with the 2nd Brigade at Killa-i-Jabir.

At the time of the entry of the British force into the Logar Valley, the general attitude of the inhabitants was inoffensive and even friendly. They made no difficulty about furnishing the necessary supplies, and were soon re-assured and relieved of any fear that they might have entertained as to our intentions by observing the good conduct of the troops. This friendly attitude, however, was not universal, and intelligence soon reached our camp that the inhabitants of Zurmat and Kharwar had taken alarm at our approach, and were in a restless and disturbed condition.

It was, therefore, deemed advisable to send a reconnaissance to the summit of the Altimor Pass leading into Zurmat through the hills, which overlooked General Barter's camp to the west of Killa Jabir; and Colonel Maclean was accordingly despatched with this object, having under his command a mixed force as per margin. General Barter at the same time entrenched his camp at Killa Jabir, so as to be protected against any sudden or night attacks.

The 1st Punjab Cavalry, 2 guns, 11-11 Mountain Battery, four companies 2-60th Rifles.

Colonel Maclean succeeded in pushing his reconnaissance as far as Shahwaz, beyond which point his instructions did not allow him to proceed. On return he reported the inhabitants of Zurmat as being in a considerable state of excitement and prepared for hostilities, and his retirement from the pass was the signal for its occupation in force by the Zurmat tribesmen, who at once commenced to throw up sungars. The appearance of our cavalry at the summit of the Altimor defile had caused great alarm, and was looked upon as significant of our intentions to occupy the Zurmat Valley. The tribesmen declared that they would oppose any such movement by force. Every night the summits of the hills were ablaze with their watch fires, and on more than one occasion General Barter reported that his camp had been fired into at night. No damage was, however, experienced.

On the 10th May 1880 Major-General James Hills, C.B., V.C., was appointed to the command of the Ghazni Field Force in Logar, and he accordingly took up his appointment on the 15th of the same month, relieving General Hughes at Hissarak.

On the 17th May Major Euan Smith resumed his duties with the force as Political Officer. Major Lance returned to regimental duty, and Major Clifford again took up his old appointment as Political Officer with the 2nd Brigade.

On the 19th May the head-quarters and cavalry brigade moved from Hissarak to Killa Jabir. General Hughes remained encamped with his brigade at the former place.

Under instructions received from Kabul, Major Euan Smith, immediately on his arrival in Killa Jabir, addressed letters to the chief Maliks in Zurmat and Kharwar, assuring them that the English had no hostile intentions towards them, nor any idea of occupying their country. The Maliks were exhorted to disperse the gatherings at the summit of the pass, which now amounted to some thousands, and to make the people understand that they had nothing to fear at our hands, and they were informed that, should they think fit to come into camp, they would be well treated. For some days no reply was received to this letter, and it was afterwards ascertained that Sultan Muhammad, the chief Malik, to whom it was addressed, had not shown it to any of the assembled grey-beards. Subsequently, a reply was sent to the effect that it would be well if two men, residents of Kulangar, might come to Zurmat to inform themselves of the wishes of the Zurmat people, and make them known to the English.

The men named accordingly received permission to go to Altimor, but on the understanding that they were not to consider themselves as employed by us for this purpose. They returned in three days with the intelligence that Gholam Hyder had arrived at Altimor from Ghazni, and was stirring up the people to hostilities, and in proof of this they brought a letter signed by him and all the Zurmat and Kharwar Maliks demanding our instant withdrawal from Logar. No reply was sent to this communication, nor indeed was any necessary. Perched as they were at the top of a lofty range of hills, the Zurmatis could do us no harm. If they attempted to come on to the plain, they would be at our mercy. But there was no chance of that. They remained on the top of the Altimor Pass until we finally quitted Deh-Moghalan on the 18th June 1880.

On the 21st May 1880 Major Euan Smith, accompanied by Major Lance, and escorted by hundred sabres, visited Charakh, a fertile province situated in a *cul-de-sac*, some twelve miles south-east of Killa Jabir.

Charakh is a most fertile little province, well-wooded, and with an abundant supply of water, and inhabited entirely by Tajiks. These Tajiks are divided into two parties, who have been at deadly enmity with one another ever since the memory of man. The one party has for its head one Khutubdin, an ancient of great age and unprepossessing appearance, who professes great friendship for the English, and who holds certificates of good service rendered to us in 1840-42. The other has for its leaders two brothers, Gholam Hyder and Samandar Khan, of whom the former was engaged fomenting ill-feeling against us in Zurmat and Kharwar. The English officers were, on the occasion of this visit, well received by both the contending factions, who, though living close to one another, will not enter each other's houses or villages. Both were profuse in their expressions of friendship towards our Government, and every one disclaimed any participation or sympathy in the proceedings of Gholam Hyder Khan. The inhabitants declared that they had been very severely treated by the late Amir Sher Ali Khan, and that the taxation imposed upon them was more than they could bear. It is the case, I believe, that the exceptional fertility of Charakh (which, with its gardens and orchards, is a

very tempting spot) has, from time to time, exposed it to exceptional demands from the Kabul authorities. Nevertheless, the inhabitants had a well-to-do and prosperous appearance. They had not paid any revenue for two years, and seemed to regard with dismay the probability of a return to any settled form of government, which should render such payment unavoidable.

On the 31st May 1880 the division struck camp and marched to the other side of the valley, encamping on the slopes of the high hills which overlook the village of Deh-Moghalan, and from which a magnificent view of the rich expanse of varied cultivation could be commanded.

At this time the country all around, with the exception of the Logar itself, was in a most disturbed state. Wardak had been excited at the news of the deportation of the Mustaufi Habibulla to India: Zurmat and Kharwar were kept in a state of restlessness by the machinations and intrigues of Muhammad Jan, and on the Maidan side Abdul Ghuffur, Akhundzada, was doing his best to stir up the people to mischief. The prime cause of all this unsettled feeling was, of course, to be found in the uncertainty which reigned at the movements and intentions of Sirdar Abdul Rahman Khan. Men had not yet made up their minds whose cause to espouse, and were everywhere ripe for any mischief that might turn up. The probabilities of a hostile demonstration against the English force in Logar seemed each day to become more probable.

Under these circumstances, General Hills constructed a complete series of defences for the division against night attacks. The villages in front of the camp were ordered to be evacuated each day at sunset, and sungars were erected on the summits of the commanding hills for the protection of the picquets. The position was thus rendered nearly impregnable.

There can be no doubt that at this period our position in Logar was somewhat delicate. Though possessing of course sufficient strength to account for any enemy that might take the field against us, we should still have been placed in circumstances of some difficulty, had the inhabitants of Logar determined to rise *en masse* against us, and it may be presumed that among themselves the advisability of peace or war was sufficiently ventilated. Any disturbance on a large scale in Logar could not fail to embarrass in a very great degree the negotiations which were at that time being carried on by the political authorities at Kabul with Sirdar Abdul Rahman Khan; and on that account, as well as with regard to the all important question of supplies, it was a great object to keep the province quiet and undisturbed. Two or three fortuitous circumstances assisted to this end. In the first place, the green crops, which covered the face of the country for miles, were entirely at our mercy: the large villages, which contained the principal wealth of the valley, were also one and all within the ascertained range of our guns: and our proximity to the principal roads rendered it impossible that any general movement should be attempted without our knowledge. Secondly, the people were reaping many advantages from our presence, and had no cause for complaint. The supplies furnished for the army were liberally and punctually paid for, and their distribution was so arranged for each

day that each village furnished its appointed quota without delay or difficulty. No hardship was experienced in this respect, and the people gratefully acknowledged the consideration shown them by the troops. Lastly, the majority of the principal Maliks were in the English camp. In commencing the operations for the collection of the revenue Major Euan Smith at first experienced so much difficulty from the chief Maliks of the province, that he deemed it necessary to detain them as his guests in camp until matters were put upon a proper basis. The principal offender in this respect, who was at the same time the richest and most influential man in Logar, was one Amin Muhammad, the chief Malik of the rich and extensive group of villages, known as Barak-i-Barak. It was felt that this man would be regarded as a sort of fugleman by the whole district, and as soon as he demurred at paying his revenue, he was at once placed under mild detention. The presence of this man and the other Maliks in our camp rendered any outside combination in Logar impracticable: and when after having paid up their revenue, they were eventually released (Amin Muhammad did not pay up until the last of all), all present danger of a rising was at an end.

Notwithstanding this, as the month of June advanced, signs were not wanting that there were many of our ill-wishers in the province. Our sentries and picquets were fired at night after night: the supply of provisions suddenly ceased: our spies in every village reported the nightly withdrawal to the hills of individuals and their families, and on one occasion the water-supply was cut off from the neighbourhood of Amin Killa. Looking back on past events, I cannot now doubt that if Amin Muhammad and his colleagues had been at large, we should have had much trouble with the Logar Valley. He was, as was well known, an active enemy of the English, and he would not have lost the opportunity afforded him of doing as much mischief as possible.

The growing frequency of the attacks on the picquets and the increasing difficulty of obtaining supplies rendered stringent measures necessary. Foraging parties were accordingly organised, and sent out each day with orders to thoroughly search any village not producing its quota of grain within an hour—grain so found was paid for at half rates. A fort, in which, as it was ascertained by the Political Officers beyond a doubt, the ghazis who came and fired at the picquets used to rendezvous, was blown up and destroyed under General Hills' orders. Another fort, where it was suspected that arms were concealed, was searched and the arms destroyed. Lastly, a body of ghazis, who had approached too near a picquet of the 60th Rifles, were taken in flank by Lieutenant Hope, commanding the picquet, and suffered a loss of two men killed and two wounded. The darkness of the night prevented our men recovering the bodies or doing greater execution, but the dead and wounded were seen by many villagers the next morning, and from that time the attacks on our camp ceased. The fields of wheat and barley in front of the sentries were also cut down, compensation being made to the owners. These measures and the occurrences above noted had the desired effect. The supply of provisions commenced to flow afresh, all hostile demonstration suddenly ceased, the province resumed its wonted peace and quietness, and, after much preliminary delay, the people began to pay the revenue.

On the 9th June Sirdar Muhammad Alam Khan arrived in camp on his way to take up the governorship of Ghazni to which he had been appointed. During his stay in Logar he resided in his own village, some six miles distant from our camp, and visited the Political Officer three times. He exerted his influence to disperse the gathering at the summit of the Altimor Pass, but without success. The Maliks answered him civilly and respectfully, but said that they would not disperse until we had left the valley. This augured badly for the establishment of the Sirdar's influence at Ghazni, and, accordingly, I was not surprised to find him back again in our camp within a fortnight of his departure. Sirdar Muhammad Hussein Khan, who was jealous of his influence with the young Sirdar Musa Jan, had taken advantage of his absence to intrigue against him, and on Muhammad Alam Khan's arrival in Ghazni, he found that there was but little chance of his authority being respected. Mushk-i-Alam and Muhammad Jan were friendly enough to him, but there was no apparent disposition on the part of any one to acknowledge him as governor. He accordingly acted wisely in returning to Kabul as soon as possible. On his way back he was looted in Wardak, but all his property was restored, and his safety secured under the orders of Mushk-i-Alam, who severely punished the authors of the outrage. Sirdar Muhammad Alam Khan passed through our camp on his return journey to Kabul on the 20th June, bearing important letters from Mushk-i-Alam for the Chief Political Officer, Mr. Lepel Griffin.

The near approach of Sirdar Abdul Rahman Khan to Kabul, and the increasing excitement visible in the capital, having rendered it advisable to collect the English forces in the neighbourhood of that city, orders were received on the 16th June that the Ghazni Field Force should without delay move towards Charasia. The entire force accordingly marched from their respective camps at Hissarak and Deh-Moghalan on the 18th June, and on the same day rendezvoused at Dadu Killa. Previous to leaving, the Maliks of Logar were all summoned by Major Euan Smith, and the meaning and object of this sudden move explained to them. They were told that it was more than probable that the English troops would return to Logar, and as it was certain that our departure would be the signal for the Zurmatis and malcontents to descend with mischievous objects into the valley, they were warned not to give these men countenance or support, or to assist them in any way in their hostile intentions towards ourselves. In reply, the Maliks one and all declared that they would keep aloof from any combination against us. They said that we had treated them well and liberally, and that they had no quarrel with us, and that we should have no cause of complaint against them. I am glad to state that, with the single exception of General Faiz Muhammad Khan of Barak-i-Rajan, the Maliks of Logar subsequently acted in a manner entirely consistent with the promises that they then made, though it is impossible not to remember that the absence of Amin Muhammad from their councils had undoubtedly a great effect in confirming them in this praiseworthy line of conduct.

As was anticipated, the departure of the troops from the Logar Valley was immediately followed by the descent of the insurgent Zurmatis and other tribes, who quartered themselves upon the various villages and levied contributions upon the inhabitants, requesting them at the

same time to join in a rising against the English. This naturally led to constant disputes, the Logaris resolutely declining to join the proposed ghaza, and the insurgents insisting on having all their wants supplied. In one of these disputes at a place called Shah Mazar, the village of Gul Alam, one of the most prominent of the insurgent leaders, a Malik, named Sadudin, was killed. There was a quarrel of old standing between him and Gul Alam. Sadudin shut himself up in his fort, shots were exchanged, and he was killed. This occurrence was made much of in the newspapers, and it was broadly hinted that our sudden departure from Logar had had the effect of delivering up all the Maliks who had been friendly to us to something very like a general massacre. The facts of the case are simply those given above: the murder had no political significance whatever, but was the natural Afghan outcome of an ancient feud, and the complexion which was put on the affair was as incorrect as another statement which appeared in the *Civil and Military Gazette* to the effect that the departure of the troops from Deh-Moghalan had been effected in such haste that certain Government property had been unavoidably left on the ground, this giving rise to the belief that we were retiring from the enemy. This latter statement, however, had no foundation. It was absolutely and entirely false. The only serious inconvenience which, as was foreseen, resulted from our departure from Logar regarded the important question of supplies, which daily became one of greater urgency. The grain stock of the preceding season had been all consumed, and the harvest in the ground was not yet ripe for the sickle. Until the third week in July, it was certain that there would be great difficulty in obtaining all that was requisite.

This was especially the case in the neighbourhood of the capital, where the demand has been so incessant, and such high prices had been obtained, that the districts of Chardeh, Maidan, Musai, &c., &c., had parted with all their reserve stock. For some time past the rich and fertile provinces of Logar and Wardak had been the main source of supply, and our departure from Logar and the consequent impetus given to the designs of the insurgent leaders of Musa Khan's party in the south at once closed the steady supply, which had been hitherto coming in from it and the southern provinces.

It therefore became apparent shortly after the arrival of the troops at Charasia that the Commissariat could not feed them, and a return movement in the direction of Logar was thus unavoidable, being at the same time rendered politically feasible by the growing certainty that Abdul Rahman had no intention of engaging in active hostilities against the English.

The troops halted for three days at Charasia, and this afforded all ranks an opportunity of visiting the city and the objects of interest in the neighbourhood, which was embraced with special eagerness by the native troops of all creeds. On the 26th June, the division marched back to Zaidabad, and in the course of four days reached Zarghunshahr, where a permanent camp was formed until the 27th July.

The movement of the troops from Charasia was the signal for the hasty breaking up of all the rebel bands that had assembled in the Logar Valley. The leaders and their followers again took to the sum-

mits of the hills and waited for events. These developed themselves shortly in a manner which, as regards these men, was equally unpleasant and unexpected.

During the stay of the troops in Charasia the political situation had, if possible, received some slight further complication by the sudden flight from Kabul of Sirdars Hashim and Abdulla Khan, who had gone to Chakri, and whose defection might naturally be anticipated to afford encouragement to those in the neighbourhood of Logar who were hostile to us. It was, indeed, soon rumoured abroad that Sirdar Muhammad Hashim Khan, who had taken a considerable amount of money with him, was offering large pay to any one who would join his standard, and though subsequent events tended to prove that he was not in earnest in his intention to commence active hostilities against us, there was considerable excitement among the numerous ruffians swarming in the vicinity of Logar.

On the 30th June, news was received at Zarghunshahr that Sirdar Muhammad Hussein Khan, who had been very active in fermenting the hostile feeling against us, had arrived at the large village of Patkao-Shanah, some twelve miles west of Zarghunshahr, accompanied by some 1,000 horse and foot, which were intended to form the nucleus of a much larger hostile gathering, and possibly to act in concert with Sirdar Muhammad Hashim Khan.

On receipt of this intelligence, General Hills at once decided on sending out the cavalry brigade to reconnoitre, and, if a favourable opportunity offered, to attack and disperse the enemy; and, accordingly, on the morning of the 1st July, General Palliser, C.B., accompanied by the 1st Punjab Cavalry under Colonel Maclean, the 2nd Punjab Cavalry under Colonel Kennedy, C.B., and the 19th Bengal Lancers under Colonel Yorke, moved out of camp at 3 A.M. The brigade arrived in the proximity of the village as the day broke, but their approach had already been notified, and the place was found to be evacuated and the enemy in full retreat towards the hills. General Palliser, however, ordered a vigorous pursuit, and at about six miles' distance the 1st Punjab Cavalry and 19th Bengal Lancers succeeded in coming up with some 800 men, who had really reached the safe cover of the hills, and of whom they killed some 200 with a comparatively slight loss on our side. The cavalry returned to camp in the evening, having been for fifteen hours uninterruptedly in the saddle and having ridden over forty miles.

The effect of this action was excellent: the hostile combination against us was entirely broken up, and Logar was at once freed from the presence of the ghazis. So great however was the terror caused by the sudden action of our troops, that immediate measures were necessary to prevent the inhabitants of Logar taking flight *en masse*. Re-assuring letters were accordingly sent out the same evening, telling the inhabitants that they had nothing to fear, and praising them for their part abstention from joining the ghaza. As all the men engaged had come from Zurmat, and none of the Logaris were implicated, these letters had the desired effect, and the people remained quietly in their homes, and on the next day recommenced sending supplies into

our camp and into Kabul, where great distress was prevalent on account of the scarcity of food, which this supply from the Logar tended materially to alleviate. The action of Patkao had also an excellent effect from a political point of view, as, before stated, it broke up the hostile combination that was already in the field against us, and it also frustrated any scheme that Muhammad Jan may have formed of joining the same. That individual had come into Logar, and was about to join the gathering when he heard of its defeat and dispersal. He severely upbraided Sirdar Muhammad Hussein Khan for having been instrumental in bringing this about, but he took no measures to repair the disaster, and himself retired to Charakh. Sirdar Muhammad Hussein Khan on his part hastened to join Sirdars Muhammad Hashim and Abdulla at Chakri, from whence all three proceeded shortly to Zurmat, in which district they remained quiet until they finally quitted it for Ghazni.

From the 1st July until the 27th of the same month, General Hills' division remained encamped at Zarghunshahr, and nothing of any importance occurred.

Reconnaissances were made from time to time in the direction of Kushi, Surkhao, and other neighbouring districts, and during the latter part of the time General Barter's brigade was detached to Zaidabad, in order to relieve in some measure the pressure concerning supplies.

Several desertions took place during this time among the Pathan soldiers of the force, but an individual who called himself a fakir, having been taken in the act of attempting to induce the men to desert, and having been shot, the desertions at once ceased. The rewards held out by him to the sepoys were comprised in the offer of increased rank and pay, and of two women to each man.

In the month of July Major Euan Smith received orders from Kabul to send in the principal Maliks to be present at the Durbar, which was held at Sherpur on the 22nd of the same month, and at which Sirdar Abdul Rahman Khan was formally recognised by the English Government as Amir of Afghanistan. Many of the Maliks attended as ordered, but some did not present themselves at Sherpur until two or three days later, when they were sent out to pay their respects to the new Amir at his camp near Charikar. The announcement of Sirdar Abdul Rahman's accession to power was, on the whole, received with satisfaction by the inhabitants of the Upper Logar between Zarghunshahr and Charasia.

On the 1st August the division encamped at Indiki in the Chardeh Valley, and on the 3rd August reached Kabul.

Revenue.—On my proceeding to resume charge of the Ghazni Field Force in the Logar Valley, on the 17th May 1880 I was directed by Mr. Lepel Griffin to take immediate measures for the collection of the revenue for the current year. The Hindu Accountant of the Kabul Revenue Office was sent out to camp with the revenue accounts, and, shortly after my arrival in Logar, I sent for the chief Maliks, and informed them that they would be expected to pay up their revenue within a certain time. The greater part of the revenue in Afghanistan is calculated and paid in kind, and as the price of grain had in consequence of the demands of the English army risen to more than double its ordinary

price, the ryots were informed that they had the option of commuting such payment in kind for money payment calculated at the prices at which grain is ordinarily saleable in Logar. The privilege thus held out to them was equal in effect to a remission of more than half the revenue. The inhabitants could, by paying in revenue to the extent of Rupees 1,000 in cash, commute a payment in grain, for which at the prices then obtaining they could obtain Rupees 2,000 from our Commissariat officers. Many of the inhabitants saw this, and eagerly closed with the offer thus made to them, and almost the whole of the revenue collected by Major Clifford from Hissarak to Wajgan was paid for in cash.

In Upper Logar, however, the Maliks declared that they would pay their revenue in kind, and held to this determination until it was too late for them to close with the advantageous offer first made to them. In this they were at first supported by Amin Muhammad, Faiz Muhammad, and other influential men, who, as I afterwards learnt, acted in this manner from the belief that, by so doing, they would eventually succeed in escaping payment altogether. They trusted that we should not remain long enough in the province to gather in all the grain that was due, whereas a money payment would have been exacted at once. When they found that our stay was likely to be prolonged, and that the punctual payment of the revenue would be insisted on, they were anxious to elect for the money commutation, but it was then too late, and they were held to the payment in kind, for which they had voluntarily elected.

It was some days before the regular payment of the revenue commenced, and this did not take place until I had detained the principal Maliks in our camp, and informed them that they should remain there until their revenue was fully paid up.

Eventually, I succeeded in collecting in cash Rupees 35,607, and in addition to this revenue grain to the amount of Rupees 86,945 was sent into Kabul, while the Commissariat in Logar were furnished with supplies amounting to Rupees 31,242-9-0. The gross average value of the revenue payments is thus shown to be Rupees 1,58,710, which amount was collected without any penal measures being had recourse to, save only such as were involved in the detention of the Maliks. The ryots after a time brought in their revenue willingly and without grumbling, and consideration was in all cases shown to such as from exceptional circumstances seemed to have some cause to claim exemption. Acting under the discretion allowed me by Mr. Lepel Griffin, I also granted a total exemption of payment to any men who, as in the case of Rahmatulla Khan of Kushi and Sahadat Khan of Upper Logar, were proved to have done good service to the English: and all exemptions on account of wakf lands and wazifa payments were also scrupulously respected. Owing to the sudden removal of the division from Deh-Moghalan on the 18th June, it was not possible to collect the revenue in Charakh and Chalozai, or from the districts lying near Amir Killa, which would have been quite feasible had time allowed of the troops being marched into those localities: but in all other parts of Logar the revenue was nearly paid in full, with the exceptions of the deductions and exemptions explained above. In addition to the amount of revenue already recorded as having been collected, it must also be noted that, during the whole time that the division remained in the Logar

Valley, the entire expenses of the postal service were paid out of the revenue incomings, as well as the pay of the local officials, mirzas, and others engaged in the collection.

Supplies.—With regard to the all important question of supplies, it may perhaps be sufficient briefly to notice here that the supplies obtainable in the Logar Valley are, to all intents and purposes, practically inexhaustible, and that an army could be maintained there for a very long period and find no difficulty whatever in supplying itself with all the necessaries of life both for man and beast. The yearly crop of grain and of cereals of various kinds is immense; the grazing for camels is illimitable; and the supply of green forage and bhoosa is ample for the supply of a very large force. During the three months that the Ghazni division remained in Logar, there was never any real difficulty about supplies, though circumstances sometimes occasioned a brief temporary inconvenience. The inhabitants, however, re-assured by the excellent behaviour of the troops and punctual payment for whatever was brought in, were ready to supply all that was necessary, save only at such times as they were restrained from doing so by the fear of surrounding ghazis. Their appreciation of the way in which they had been treated by us, and of the many advantages they had derived from our presence in the province was evinced by their absolute refusal to join the ghazis when they assembled in the valley after our departure from Deh-Moghalan and previous to the action at Patkao-Shanah, and they acknowledged with gratitude the consideration and kindness which had been shown them.

It must be remembered that the year 1880 was one of unusual dryness in Logar as in other parts of the country. Much land that was ordinarily cultivated was left untilled from this account, and a considerable quantity of the crops only produced half their yield owing to the impossibility of affording them sufficient irrigation. Notwithstanding this, supplies of all sorts were always forthcoming.

Water.—The water of the Logar river is excellent, and the irrigation canals drawn from the river distribute it all over the province. There is capital fishing in the river, and fish over 4lbs weight were taken out of it with hook and line.

SIMLA,
26*th October* 1880.

(Sd.) C. B. EUAN SMITH, *Major,*
Political Officer.

Logar Valley. Villages in the Upper Logar. (Southern Division.)

Groups of Villages.	Headmen.
1. Barak-i-Rajan— Contains 1,000 families, including the outlying hamlets. Inhabitants mostly Tajik.	1. Malik Jehangir, Tajik. 2. Kalandar Khan, „ 3. General Faiz Muhammad „ 4. Naib Ura Ullah, „ 5. Samand Khan, Popalzai. 6. Sahadat Khan, „ 7. Gholam Hyder, Kazzilbash.
2. Barak-i-Barak— 500 families, Tajik.	1. Amin Muhammad, Tajik. 2. Ghousudin „ 3. Aziz Khan „
3. Patkao Rogani— 100 families, mostly Tajik.	1. Turrebaz Khan, Tajik. 2. Shah Nawaz „ 3. Mir Jaffir, Syud.
4. Shah Mazar— 150 families, Stankizai branch of Ghilzais.	1. Gul Alam, Stankizai. 2. Haji Ata Muhammad, „
5. Yusaf Killa— 200 families, Stankizai.	1. Shukur Khan, Stankizai. 2. Padshah Khan, „ 3. Suja Khan, „
6. Jabir Killa— 200 families, Stankizai.	1. Abdul Karim, Stankizai.
7. Patkao-i-Shahana and 8. Killa Lias Khan — 260 families, including 3 hamlets of Syuds (50 houses), and one of Ahmedzais (12 houses), remainder of residents are Stankizais, Tajiks, and a few Mohmands.	1. Haz Gul. 2. Syud Murtaza. 3. Haji Mur Gul. 4. Malik Kamran. 5. Gul Muhammad.
9. 10. Mango Khel and Fatteh Khel— 100 families, Stankizais.	1. Latif Khan. 2. Sherjan.
11. Uni Syudan— 250 families, Syuds and Tajiks.	1. Mir Sobhan. 2. Mir Usman.
12. Hissarak— In village itself are 100 families of Tajiks and Liasi Khels (a branch of the Stankizais). Attached to Hissarak are— 4 hamlets of Liasi Khels 45 families. 2 „ of Tajiks 20 „ 1 hamlet „ Kazzilbashes 15 „ 3 hamlets „ Popalzais 40 „	1. Faiz Muhammad, Liasi Khel. 2. Wahid, „ 3. Abdul Rahman, Tajik. 4. „ Rahim, „ 5. Sultan Ahmed, Popalzai.
13. Moghal Khel— 50 families, Stankizai.	1. Millah Kasim. 2. Mamrez.
14. Wazir Karez— 40 families, Hazara.	1. Malik Allok. 2. Sher Muhammad.

Upper Logar—Continued. *(Southern Division.)*

Groups of villages.	Headmen.
15. Killa Yakub 16. Killa Hakim and 17. Khalilabad — Are Government property. 110 families, all Hazaras.	1. Yakub Khan.
18. Juyak— 40 families, Kazzilbashes, and a few Afghans of various tribes.	1. Habibulla Khan, Kazzilbash. 2. Saifudin.
19. 20. } Paio Khel and Tattor— 25 families, Stankizai and Syud.	1. Malik Alif Khan, Stankizai. 2. Syud Nizamudin Shah.
21. Chalozai— 250 families, Suliman Khels.	1. Sirbuland. 2. Sherdil. 3. Akhtar Khan.
22. Mohmand— 40 families, Mohmands.	1. Pir, Mohmand.

Abstract of above.

22 village groups, containing approximately 3,535 families.

All the above are included in the Southern Division of the Upper Logar.

Note.—To south of Logar Proper, but included in it in the Kabul revenue accounts lies—

Chirakh— 1,000 families of Tajiks occupying 4 villages, *viz*:— 1. Killa-i-Nao. 2. Pingran. 3. Garmawa. 4. Nao Shahr.	Headmen. 1. Kutabdin. 2. General Gholam Hyder.

Upper Logar. (Northern Division.)

Groups of villages.	No. of forts or hamlets.	No. of families.	Tribe.
Kulangar group	41	180	Khaja.
		60	Syuds.
		80	Tajiks.
		10	Afghan.
		30	Kazzilbash and Hazara.
Purak group	17	175	Stankizai (Ghilzai).
		15	Nassir "
		6	Tokhi "
Uni Suffla	2	20	Hotak "
Deh-i-Nao Amin-ul-Mulk ...	3	50	Farsiwan.
Babus	2	120	Painda Khel, Suleiman Khel.
Karez-i-Bashir	2	10	" "
Shulok	1	30	Gaddai Khel, Ghilzai.
Karez-i-Piaro Khel ...	1	30	Piaro Khel, Suleiman Khel.
Karez-i-Mirwal	1	10	Ahmedzai, Ghilzai.
Dado Khel	2	100	" "
Karez-i-Syudan	1	8	Syuds.
Total ...	93	934	
Add Southern Division ...	...	3,535	Families.
Total ...	...	4,469	Families in Upper Logar, *i.e.*, in the portion of the valley south of the defile, called Tangi-Waghjan, but exclusive of Chirakh and Amir Killa and its vicinity.

(Sd.) Cecil Clifford, *Major,*
2nd Punjab Cavalry.

Valley of the Lower Logar, i.e., *north of the Tangi-Waghjan.*

Villages.	Tribe.	Headmen.	Number of forts or hamlets.	Number of families.	Remarks.
Zargunshahr	⅔ Tajik ... ... ⅓ Ahmedzai	Jabbar Khan	9	250	On direct road between Kushi and Kabul. Watered by karezes.
Burg	Ahmedzai	Bawal Khan	4	100	To east of River Logar and close under the Koh-i-Sultan range of hills, watered by karezes.
Surkhao	Ditto	Pasoshah Khan	8	120	
Mazgin	Tajik	Syud Muhammad	1	30	
Karez-i-Daolat	Niazi and Ahmedzai ...	Padshah Khan	1	10	Half-way between Zargunshahr and Mirza Khel.
Killa-i-Nazir	Niazi	Katak	1	20	Between Karez-i-Daolat and Deh-i-Nao.
Killa Rahim Khan ...	Tajik	Rahim Khan	1	10	Close to Tangi Waghjan on left bank of Logar.
Waghjan	Ditto	Painda Khan	1	20	On left bank of Logar.
Moghal Khel	Stankizai	Gholam Hyder	7	70	Ditto ditto.
Karez-i-Alam	Ditto	Syudad	1	10	Ditto ditto.
Surkhabad	Hazara	Ali Muhammad	1	40	Ditto ditto. A Government village.
Shahgassi	Ahmedzai and Hazara ...	Fakir Muhammad	1	10	On left bank of Logar.
Bagh-i-Sultan	Tajik	Sadrudin	4	50	On right ditto.
Deh-i-Nao	Ditto	Jallai	1	150	Ditto ditto.
Killa Wazir	Ahmedzai ... ... Hazara ... ... Tajik	1. Akhbar	...	...	
		2. Langar	2	20	Ditto ditto.
Mirza Khel	Ahmedzai	Jan Nippar	5	80	Ditto ditto.
Killa-i-Kishin	Hazara	Ainulla	1	30	Ditto ditto. A Government village.

Mahomed Aga	Tajik	Abdul Rahim	3	200	On left bank of Logar.
Killa Hafizulla	Stankizai	Habib Khan	1	4	Ditto ditto.
Kuti Khel	Ditto	Ditto	12	300	On right ditto.
Sher Afghan	Ahramzai and Tajik ...	Mirabudin	4	50	Ditto ditto.
Zahidabad	Miscellaneous	Abdul Wahab	2	40	On left ditto. A Government village.
Gumran	Adramzai	Mallik Hamid	14	150	On both sides of the river.
Sangar Khel	Stankizai	Mir Ahmed	1	20	On right bank.
Safed Sang	Tajik	Imam Khan	3	100	On left ditto. A Government village.
Rahmatabad	Ditto	Dost Muhammad	1	5	On right ditto.
Aubazak	Sahak	Shah Maksud	8	102	West of River Logar in a valley towards Maidan. Karez water.
Auparan	Ahmedzai	Arsalla Khan	5	30	East of River Logar and close under the hills. Karez water.
Dashtak	Hassankhel	Rahmatulla	5	40	
Shadkhana	Stankizai	Gholam Maiudin	1	10	On right bank of River Logar off the main road.
Katta Sang	Ditto	Ditto	2	40	
Mupai Bala	Arab and Tajik	1. Nazir Muhammad ... 2. Maiudin	4	160	On left bank off the direct road to Kabul.
Muspai Paien	Ahmedzai ... ... Hassankhel ... ... Popalzai	1. Abdul Salam ... ... 2. Muhammad Usman ... 3. Abdul Rasul	23	250	A continuation of valley of River Logar. Hamlets on both sides of the river off the Kabul road, and out of sight of it.
Killa-i-Nishan	Tajik	Tuti Khan	1	3	On west of Kabul road.
Nonias	Ditto	Taza Gul	5	60	Ditto ditto Karez water.
		Total hamlets ...	144	2,584	Families in Lower Logar.

(Sd.) CECIL CLIFFORD, *Major*,

2nd Punjab Cavalry.

CHIPS FROM THE LOGAR VALLEY.

J. W. JOHNSTON, *Surgeon-Major, 3rd Goorkhas*, F.R.S., (Edin.), M.R.C.S., M.D., (Edin.), M.R.VET.COL. (L. & E.), F.R.Bot.Soc., Prospector of Geology.

THE LOGAR VALLEY.

Chorography.—The Logar Valley is an upland strath set in a loop of the Safed Koh range; a secondary heading of hills trail from the right bank of the river and cut it unequally in twain. It is naturally defined by the Sang-i-Nawishta Tangi on the north, the Tangi Wardak gorge on the south. Over the eastern flank rises the commanding heights of Altimor, Shuturgardan, and Sirkow, while along the west trends the bold shoulders of the Kohi Baba. The "crag" drops south-westerly, the "tail" slopes south-easterly.

This is the chief lie of the valley along which runs its hydrographic system, consisting of rills springing from the fissured rock that meander from the eastern and westerly watershed, and unite to form the Logar river which debouches into the Kabul. The denuding influence of rain has corried and rundled the softer stratified rocks, snow water rushing into crevices which lichens and perennial hardy plants had bored with their fibrous roots, and refreering there have loosened many huge blocks, which as the milder spring approached rolled down as landslips.

There is a general absence of grand feature, but occasionally as at White's Hill a noble mural limestone scar grasped in glittering garnetiferous mica schist yawns in a magnificent profile on the sky line. The grey tint of the limestone is monotonous unless when broken by pebbly conglomerate colored by yellow green glinting hornblend, dark lustrous hypersthene, or roasted ferruginous clinkstone. Sparse vegetation has softened, and somewhat toned the harsh features of the hill sides, but there is no approach to grassy slopes, lush banks, or soft wolds.

Geology.—The Logar Valley during an era of hyper volcanic action during the period when the mightiest cabaclasym that has rocked the world since the angels sang their "Te Deum" o'er a cradled globe, radiating its incandescence into stellar space rose from the base of the pliocene sea. The Suliman which through the Safed Koh meets the Kohi Baba of the Hindu-Kush in common with the south-eastern Asiatic mountain system that strikes across the Western Hemisphere coevally appeared, and fixed the interlacement of intramontane vales—of which the Logar is one—on the Cis-Hindu-Kush. (The same huge Plutonic landwave rolled the pliocene sea northwards, and determined the hydrography of the Turkistan basin dropping a saline land-locked lake here and there.) The sea receding down the fiords and glens of the new created world, swept India-wards until it gained set boundaries yielding the kunker beds of India from its calcareous, and the rock salinas of the Punjab from its saline matrix. These vast saliniferous licks whose crystallographic formation is an unsolved puzzle attracted the huge mammals of the post tertiary period that roamed in toothsome jungles skirting the Eastern Suliman slopes.

As neither the coal or ossifera of that era intrude further north than the Khyber plain, it is apparent that the Logar climate was arctic, icebound, and quite unsuited for faunal or floral life.

The Kushi moranies, mere hillocks of gravel, and the uniform distribution of the "boulder drift," chiefly representing the water worn granitic and metamorphic series, support this conclusion.

At an age which fits chronologically betwixt the post tertiary and pre-historic, the Logar lost its boreal character, the land shook itself free of the ice mantle, and the boulder drift was deposited from bergs and floes as they melted to form fluvalite lakes, in which the lymnea and planorbis clinging to cellular plants abounded. Even posterior to the disappearance of the ice blanket, the climate must still have maintained its rigid character, as no trace of advanced life exists, such as is found in this geological horizon on the southern tail of the Suliman range, of which the ossuary of the extinct rhinoceros is a type.

Snow-wash and gathering springs from the fissured rocks, which were loosened under further meteoric change, channelled the rivulet which has continued its flow to the present epoch; fettered in a narrow bed during the summer, icebound in winter, and rushing in full flood in the spring time of the year.

Lithology.—A *lithological study* of the strata shows that the granitic and metamorphic rocks were, during the period of revolutionary globe-making, injected and disrupted through roasted in gnarled masses with, or overlaid upon the grey-yellowish blue triassic limestone, which constitutes the bulk of the stratified rock contouring the valley.

The *stratified* rocks are triassic limestone gypseous beds: lime-shales, pebbly and rubble conglomerate set in a calcareous matrix. The entire absence of fossiliferous remains indicate the existence of a comparatively tranquil sea, in which azoic strata quietly formed and remained undisturbed until the mid-tertiary period.

The *igneous* rocks are represented by garnetiferous mica schist, hornblend granite, or green crystalised basalt on the north, and by massive veins of pearly quartz set in long wavy ridges of mica schist on the south.

Ternary soft felspathic granite occupies the west, and syenetic non-micaceous granite associated with metamorphic clay slate, diorite, and hornblend are strewed along the east.

The *economic lithological* products consist of roofing slate near the base of Sirkow: gypsum form the limestone beds at Zargunshahr; and porous marl clay from western hill base. This is worked into "surais," and owes its utility to being devoid of all approach to alkaline salts.

I note the *topographical lithological composition* of the hills around the subjoined places in the Logar Valley:—

Tangi Wardak.—Pearly quartz speckled with mica flakes: gnarled gneiss: hornblend schist passing into diorite granite proper.

Barak-i-Barak.—Pepper and salt trap: spider veined hornblend: dark streaked diorite.

Zargunshahr.—Syenite : hornblend granite, with traces of antimony : metamorphic clay slate : steatite marls : blue limestone.

Zahidabad.—Gypsum : hornblend schist : columnar basalt : pink quartz.

Charasia.—Glassy quartz plain and tinted, with mica : foliated garnetiferous mica schist : lustrous mica slate : roasted ruddy limestone, slaked with garnetiferous gneiss, which is again veined with cupric blue quartz : and orbiculoid roseate marbles set in a buff limestone matrix.

Throughout the valley the gravel and boulders of the glacial drift abound, while triassic limestone and conglomerate constitute an integer in almost every hill. It is worthy of note, although outside the Logar, that the same stratified limestone and felspathic gneiss schist occur equally at Sher-i-Dan Pass and in the Residency at the Kabul Bala Hissar.

Botany.—The sub-alpine Logar Valley is phytologically emplaced in the steppe region. The indigenous vegetation chiefly consists of scrubby perennials armed with fibrous roots and scant nude or hirsute leafage. This is freely represented by numerous varieties of astragali and saltworts, the mugwort; wormwood; Persic rue, and its cogeners yield bitter extracts. Thistles and allied spring, herbaceous plants, such as the true alhagi camel thorn, which excretes a gum resin—turanjbeen manna—abound.

Economic and esthetic trees only thrive well in the area of irrigation, being sparse and stunted elsewhere.

There is a total want of fernery or moss, and an absence of aught approaching to park-like scenery or bushy bank.

Adown the lea of cultivation edible bulbs and root leaves flourish, such as the tulip, onion, and hyacinth. The hardy wild onion and three varieties of salep however dot the arid hill slopes.

Immortels and nettles are conspicuously absent. Annuals perish in winter. It is only during the short rainy spring that indigenous vegetation can be said to abound : all through the rainless summer, variant autumn, and sub-arctic winter, vegetable life slumbers.

By a judicious utilisation of karairan and irrigation ruts which the Logarite fully understands, the valley now a luxuriant cereal and fodder producer might be made a magnificent emporium of grape, almond, and olive culture. The Logar soil is more gravelly and harder than that girdling the Tarnak, which has in some places cut a channel through canons deep enough to render afertile the superemplaced land.

Indigenous vegetation runs in three zones, which I classify into—*campestral* or wildings nurtured by irrigation in the neighbourhood of fields and villas; *pastoral* plants struggling for existence on the arid gravel plateau; and *sub-alpine,* the flora of the hill sides.

A tabular précis of the wildings picked in the valley, arranged in their natural orders, is attached as Appendix I.

With the view of more clearly explaining matters, I record a running summary of the plants found in the three floral belts :—

I. Campestral.—Fruit ornamental and economic trees, such as the apricot, apple, eleaguns, willows, May, farrash, and poplar; club and bullrush; forget-me-nots, campion clove pink; chickweed; chickory; convolvuli; stock; candytuft; raddish; castor oil; sunspurge; mushroom; morell; fumitary; rosemary, sage, peppermint; dead nettles; Vetchie's clovers; white lupin; mallow; holyhock, poppy plantago; pimpernell; bedstraw; pheasant eye; ladies' mantle; silver-weed; henbane; datura; belledonna: hemlock; fool's parsley: cicely; agivam and water-cress.

II. Pastoral.—Wormwood; mugwort rue; eyebright snap-dragons; camel-thorns; spear thistles; upland grasses; withiana; iris; dog-roses; sweet briar; tulip; hellebore; bramble; asparagus; gemista; and thornless astragali.

III. Sub-alpine.—Almond; olive; pistachio; barberry; thistles; fennel; lavenders; borages; mints; balms; juniper; hedgehog crucifier; sedum; houseleek; lichen; gentian; orchis; salep; hyacinth; fox glove; and thorny astragali.

The *indigenous trees and shrubs* are the acacia (babul); apricot; barberry; briar, sweet; eleaguns (sangit); juniper; mulberry, white and black; olive; pistachio; poplar; rose, white, yellow, and greenish-red; tamarisk, Indian and English; the willows and osiers.

The *cultivated fruit and ornamental trees* are the almond; apple; apricot; cherry, whiteheart and morell; damson (alu Bokhara); eleaguns, the red sangit berries, are eaten both in the fresh and dried state; greengage; mulberry—the wood is utilized for furniture; barley plum; peach; poplar-groves are cultivated for nine years when they are chiefly cut into for grape drums; rose, yellow, and greenish red; vine, trained without trenches and pruned into shrubby bushes; and the willows. The cutting of the drooping Babylonian yields the bed-i-musk; the osier twigs are manufactured into creels and baskets, while the wood supplies charpoy legs and household furniture; the common variety is cultivated in avenues, principally for its wood charcoal utilized in gunpowder manufactory.

Owing to scarcity of wood not only are all sorts of trees used for fuel, but also the grasses and stems of cereals, which are augmented by the droppings of camels and cattle.

The *indigenous wildings eaten* are the kernels of the almond and apricot; bramble-berry; water-cress; chickweed; mustard and rape; olives; rhubarb; as native chaukri and blanched rawash—the shepherd's purse, dandelion leaves, the corms of the salep, tulip and onion, and the leaves of the onion and grape, hyacinth. These corms and root leaves were largely used by the force; and formed an agreeable alliaceous relish and spinage.

The *medicinal herbs of the valley*—

(*a.*) Officinal in Indian Pharmacopœia are the artemesia; belladonna; capsicum; cornium; datura digitalis; daphne; ergot; linseed; rose; rosemary; rhubarb; taraxacum; fig; hordeum; barley; hyocyamus; juniper; mints; spear and pepper; mulberry; rice ricinus; castor-oil; vine and wheat.

(*b.*) *Those used by the natives* are ajwain seeds; albagi gum resin and holyhock capsules as a demulcent; mugwort and rue as bitter tonics; the olive and dandelion as laxatives; the gallic pistachio and tamarisk, in which are produced the cynipes galls, are used as an anti-dysenteric, and in combination with rice as a wound cleanser, the Kabul pistachio which secretes sweet mastic gum—"shaker sharin"—the Babylonian willow, the sole producer of bed-i-musk, which is very useful as an anti-periodic and anti-rheumatic, and the urithiana and whose leaves are a bitter tonic and likewise coagulate milk. The jaquini, the entire plant of which is given as a drench to domestic animals when affected with catarrh or chest disease, is the only veterinary medicine I picked.

(*c.*) The plants equally officinal and used by natives are the fennel; dill; coriander; cummin; and poppy.

Two special points in the indigenous flora demand notice.

1. *Salep-misri* has hitherto been described as bassorine—a species of arrow-root derived from the roots of orchidiæ; to wit orchis, mascula, and other varieties. On the ridge crowning the Tangi Wardak I picked several alliaceous plants, which were reputed to yield the salep. Colonel Maclean, Commanding 1st Punjab Cavalry, very kindly, on my heliographing him, made careful investigation into the saleps in the Altimor Pass. The result is interesting; three distinct varieties of salep were abundantly found. None of them are orchids, all belong to the alliaceous-leek order. They bear respectively white, blue, and greenish flower pannicles. A supply of the roots have been conserved and will be sent to Kew. This discovery, I fear, overthrows the reputed historical fact that real salep was vended in London streets at a penny a bowl prior to the introduction of coffee. It was an orchidious salep, and therefore an imposture of the same nature as that practised by the Kashmiris who prepared orchis, corms, and retail them as salep. This is the real origin of the black inferior salep that crowds in early winter the native druggists' shops of the Punjab.

The pure salep is an opulescent ovoid corm and has a dead gelatinous white hue. It sells for its weight in silver, and is in great repute by "bonbivans" and roues as an aphrodisiac. It is a very nutritious and demulcent starch eminently suited for gastro-intestinal catarrhs.

2. The thorny *astragali* secrete a gum allied in character to and commensurate in action with galbanum officinally described as only procured from the ferula galbaniflua in Persia, which is an umbelliferous plant, while the astragali are leguminose. I am not aware if the plant has ever been grown experimentally, and the source of galbanum distinctly traced. Galbanum is sold in our Indian bazaars as butise and loz. The gum of the astragali is similarly designated, and appears physically and therapeutically to be co-equal. The Ghilzai traders inform me that all the loz of commerce is picked from these astragali. The chief demand is at Delhi, to which many camel-loads are deported yearly, and whence it is exported to Europe.

I have personally picked the gum, which if it is not the galbanum, so very closely resembles it that I can detect no difference. Undoubt-

edly astragali gum is vended as galbanum throughout India. The gum-producing astragali are stored as winter fodder for camels.

I also call attention to "sulajeet" or "momai," the basis of Madame Rachel's beautifying process "The dew of the rock" reputed to be brought in by swift camels from the desert. It is a gum found in the Hindu-Kush. The exact nature of this gum I have not yet been able to decide. Wounded animals are reputed to seek for and lick it. It is also regarded as a grand wound salve. It sells in Kabul at Rupees 5 a tolah! I hope yet to solve the mystery. Mayhap it is a gummy lichen allied to the reindeer or Carrageen moss.

"Sulajeet," I am led to understand, is likewise scraped from the rocks near Magdala in Abyssinia.

I append (as Appendix II) a catalogue of the chief vertebrata and invertebrata found in the Logar Valley. I regret I am from want of any work on this subject unable to record individual scientific designation.

Deer and other large mammals are only passing visitors. The eggs of the tortoise and the hedgehog itself is eaten. The black partridge is not found. Quail appear in May and August. Dr. Emerson discovered the large female sand-grouse sitting on her eggs near Dado Kheyl. The nest was simply a hollow in the sand. Lampreys, eels, and crawfish are unknown. The cobra and karite are occasionally seen on the surrounding hills, but the harmless zucopsis is the only real serpent of the valley. The bee, although swarming near the Shuturgardan and in the Kuram, does not nest: all honey is therefore imported.

Locusts recur in May or June every third or fourth year, and inflict considerable damage. The cockchafer, which goes under the soubriquet of the "Pathan doomba," is roasted and eaten. The active female scarabeus, rolling the droppings of camels and horses to nidify in, is a curious sight. The beetles fight vigorously for the prize, their serrate legs clashing audibly with each other. Grasping the nidus in her posterior limbs, she pushes it blindly on progressing with a stern front motion, overcoming every obstacle with a sysiphoid determination. A suitable spot is at last reached, laying the ball aside, she tunnels a hole using her hind legs as a spade to shovel the earth out with, while she digs vigorously with her fore feet. When the wall of loose earth gets too high and slips down upon her, she wheels round and drives through it with her frontal shields, occasionally coming out to compare the area of the pit with the size of the dung-ball; she perseveringly works, on a whirlpool of acute energy. Fixing matters at last she buries herself with the ball, nidifies in it, and does not, as is frequently recorded, perish in her nest, but so soon as her eggs are all laid, she leaves them to be matured by manural fermentation, and commences a fresh period of fertilisation.

Regarding the *domestic animals*, although shepherds with the majority of their flocks migrate to Kuram and allied valleys in winter, a proportion are domiciled in the villages. The lambing season is from mid-March to mid-April. The farmers reckon that an ewe and she-goat carries five months, a cow ten, a mare eleven, and a camel twelve

months. The doomba are *the* sheep of the valley. They have a short flat tail and small ears. The mutton is good. They lamb in spring. The Hazara is a short-tailed variety. They never thrive in the Logar, all getting out of condition from "rot" or "liver-fluke." In Hazara the ewe is reputed to lamb in April and October, the doomba fattens in the Hazara hills, but only carries in spring. The Koocha, Kohistan, or Turkistan sheep is very large, frequently carrying massive horns. The fibre of the muscle is coarse and the flesh rammy. The fat is deposited as a bifed lobe in the caudal appendage. It has really no tail. The Ghilzai mountain sheep has a flat but small tail with long pendulous ears. The mutton is sweet and superior to the Hazara. Neither the Koocha, Hazara, or Ghilzai fatten in the valley. The last two are well set up, the fat chiefly depositing as in the English sheep around the kidney and along the flank.

The cattle are small in stature, and the meat poor in quality. The average yield of milch kine is four seers of milk daily, the specific gravity being 1026.

Ewes are regularly milked; their daily average is 10·5 chittacks, specific gravity 1033.

Goats.—Both the large valley and small hairy mountain goat are excellent milk-producers, giving an average of 1·3 chittacks daily, specific gravity 1029·6 (ninety-three observations).

Mules of good transport qualities, although rather small, are occasionally bred: the mare is invariably the dam. A jenny is never covered, so there are no "jennettes."

The *ass* is abundantly bred. They are small sturdy creatures with wonderful carrying ability.

Horses are mostly galloways and ponies. The latter are excellent for baggage purposes.

Camels are hardy and hairy, with broad forehead and narrow rat-like jowl. They are all well ribbed up and easily carry six maunds. Their hair yields "pashm;" from the milk "kroot" is prepared, while their droppings are stacked for fuel.

Fowls.—Much of the poultry is beautifully feathered and pencilled. From February to June, again in August and September, they usually lay two days or end with a bye-day following. In July they moult, and eggs are scarce. From October to January only an odd fowl or two lays. There are many varieties of fowl, resembling in size and taste the dorking: the digits however differ. It produces a brownish egg quite equal to the large English fowl. The more ordinary small hen lays with the persistency of the Hamburg which it resembles. The *Bantam* is unknown. The gamecocks are very plucky and fight until victorious or exhausted.

Dietics.—The correlation of food and energy, of tissue want and tissue waste—is well recognized. It is customary from the melting of the snow in spring until it again falls heavily in autumn during the period of active labor to eat thrice a day. In winter, when practically house-bound and muscular activity is lessened, food is only served twice daily.

The winter diet is—

Morning.—Hot maize, millet, or wheaten chapaties with kroot (dried cheese) boiled in ghi, milk, dried fruit, rarely eggs; meat twice a week.

Evening.—Boiled rice, dal cooked with ghi, and eaten with salt and pickles, milk.

The spring, summer, and autumn diet is:—

Day dawn.—Cold chapaties and water.

Morning.—Flesh as a bouilli and bouillon—cow, camel, goat, and sheep are eaten—warm maize or wheaten cakes, butter-milk, dal cooked in ghi, sags as spinage with condiments.

Eventide.—Rice and milk (keer), with breadstuff in the morning.

In June the millet and in July the kalak wheat only are made into chapaties. Burkot, as maize or millet brose, is occasionally eaten.

Preservation of food.—Mutton is prepared in two ways for winter use:—

Kakh or dry meat.—The sheep is skinned and cut in quarter, hand-rubbed with salt and hung from the rafters.

Landi.—A fat sheep is gralloched and eviscerated, the hair singed off the unskinned carcase, which is salted and suspended whole from the roof.

Kroot is made by carefully drying camel milk. It is cooked with ghi, and eaten as fried cheese.

Mulberries, apricots, and grapes are dried by the landed proprietors, but the majority of the populace purchase from itinerant Kohistanis, who perambulate the valley in autumn.

Cauliflower, cabbage, turnips, carrots, cucumbers, and the egg-plant are boiled, and preserved in a saturated solution of mustard seed.

White wine only is made. A few of the "upper ten" have wine presses. The small white Sultana grape is alone used. The process is to fill a large vat, and press out the juice by treading with the feet; the liquor is strained into an enormous earthen jar, and allowed to ferment for six days. Porous surais are floated in the liquid, which, as they fill, are picked out, and the wine is racked for use.

There is only one brandy still in the valley. It is made from the Sultana raisins at Kulangar.

Opium is eaten and smoked with tobacco.

Tobacco.—Both sexes and all classes smoke the dry leaf. The Afghans powder it and stick it between the dental interstices. Few snuff.

Indian hemp is only cultivated at Charagh and Agu Jan: "Churrus," the sifted resin, is smoked.

Bhang, an infusion of the leaves, is drunk, and "mayoon," a melange of watery extract of "bhang," made into a sugar-candy, and bristled with almond pips and walnut kernels, is eaten as a sweetmeat.*

Water.—River water is always preferred, the karez streams being flat and heavy. The karez water at Zahidabad is sulphurous.

Dress.—In summer a light cotton blouse, shirt, wide pyjamas, skull-cap, puggery, and shoes are worn in the Logar. A wide blue skirt and pyjamas are affected by the women. Girls wear a long blue (sometimes adorned with gold stripes) short-bodied cotton gown.

In winter a Kabul or Ghazni posteen, pyjamas of burzu (black barak from Kohistan), and a pair of long thigh leather snow boots made of cow or camel skin, and lined with felt, are universally worn.

Neither the Kandahar felt kosai, the camel hair "barak," Hazara choga, nor the short lacing boots, so much patronised in Southern Afghanistan, are utilised.

Manufactures.—These are few. Pottery as "surais," coarse felt rugs, and blankets. Socks are made from sheep's hair only. Goats' skins are in the untanned state exclusively used for Kidgi tents.

Ethnology.—There are two chief racial elements in the Logar Valley, representing the Indo-Germanic and Mongolian Ettunic families. Of the Indo-Germania, we have the Afghan, Tajik, and Kazzilbash. The Hazara is of Mongolian origin.

There has been considerable inter-crossing between the original Persic Kazzilbash and the Afghan. The Tajik is mostly Persic. Mongolia hybrids abound. In them the oblique eye is evanescent.

Through the kindness of Lieutenant Pulley I am able to submit four water-colors showing a typical Afghan (an Ahmedzai Ghilzai), a Tajik, a Hazara, and a Kazzilbash. The types speak for themselves. Lieutenant Pulley has also favored me with two sketches showing the distinctive character of national dress in Northern and Southern Afghanistan. (*Vide* dress.)

The Afghans are the most numerous. They are subdivided into five sects—Ahmedzais, Adramzais, Kuttikhels, Karotis, and Mushwanis. The two first are chiefly small crafters and farm laborers. During the winter many of them prefer a migratory life in a more congenial clime, living mainly by theft. The Kuttikhels are shepherds and drovers. The Karotis are merchants and camel-breeders; while the Mushwanis are merchants and crafters.

The Tajiks are the chief carriers, and the Hazaras mostly farm servants.

The Kazzilbashes are either landed proprietors, who retain Hazaras, Ahmedzai or Adramzais as servants. They live on their estates or serve the Crown as cavalry soldiers.

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* Food-grains for man and beast are carefully stored.

Cows, fowls, and all other domestic animals are penned.

Astragali, alhagi, rhazzia, and thistles are stored for camel forage.

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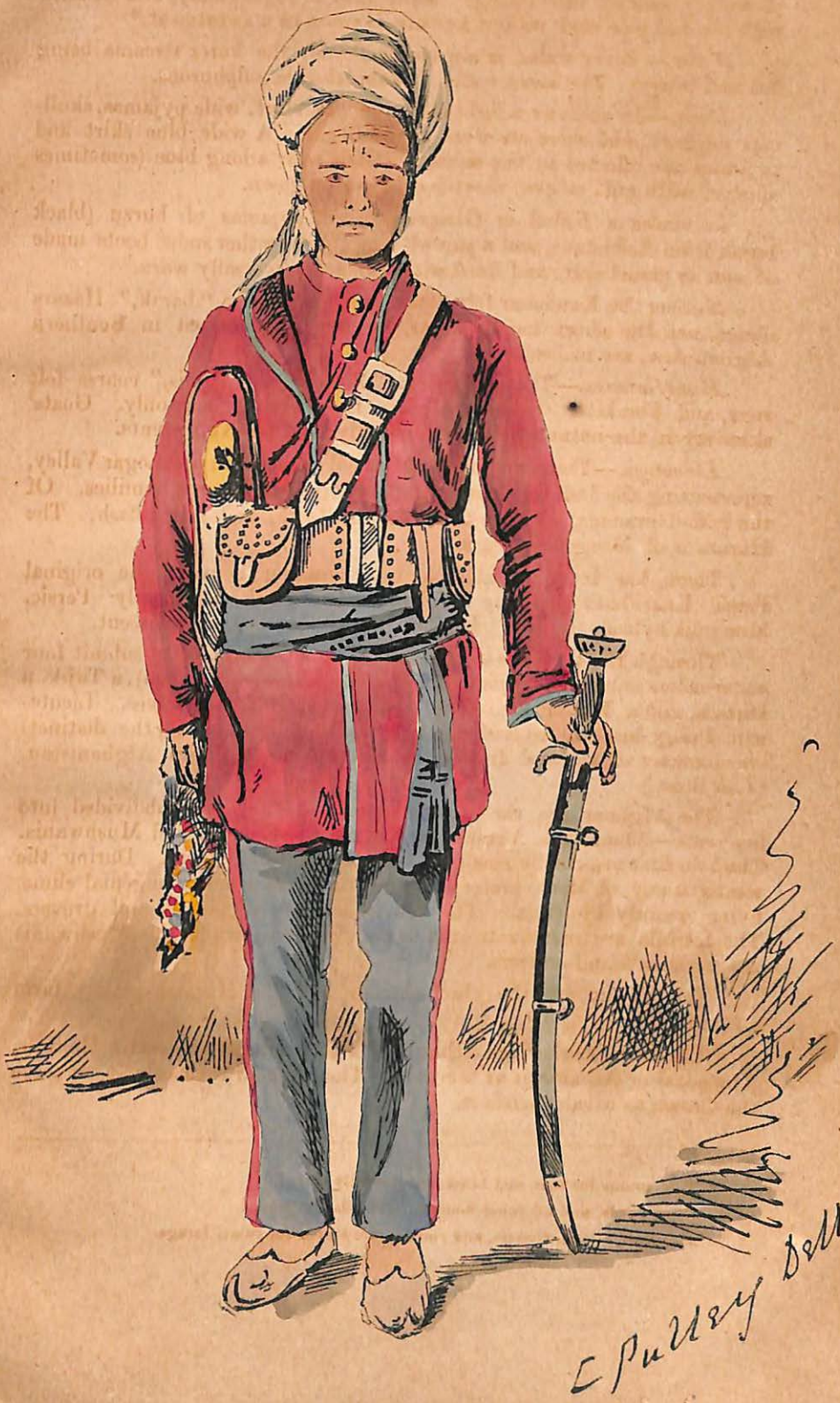

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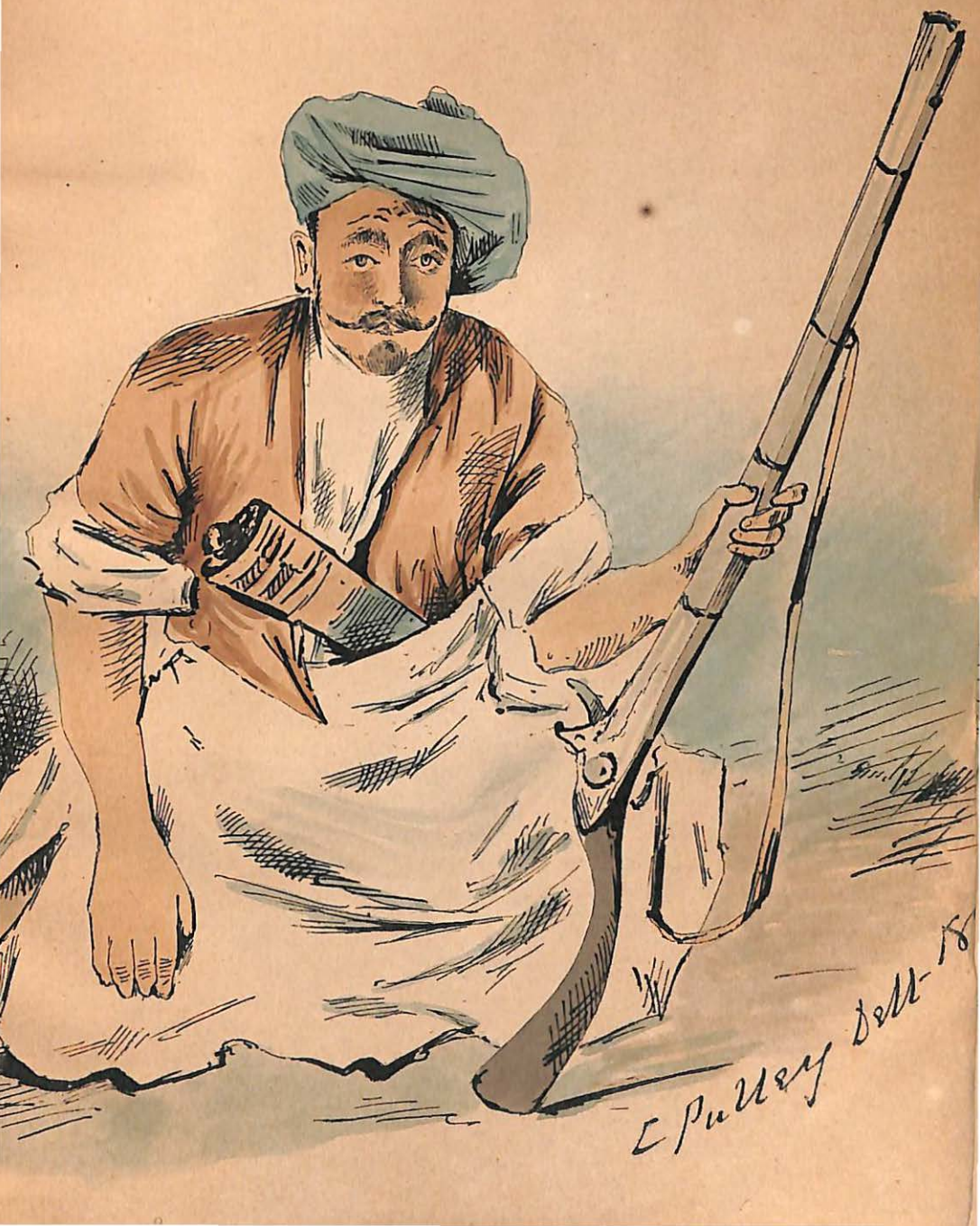

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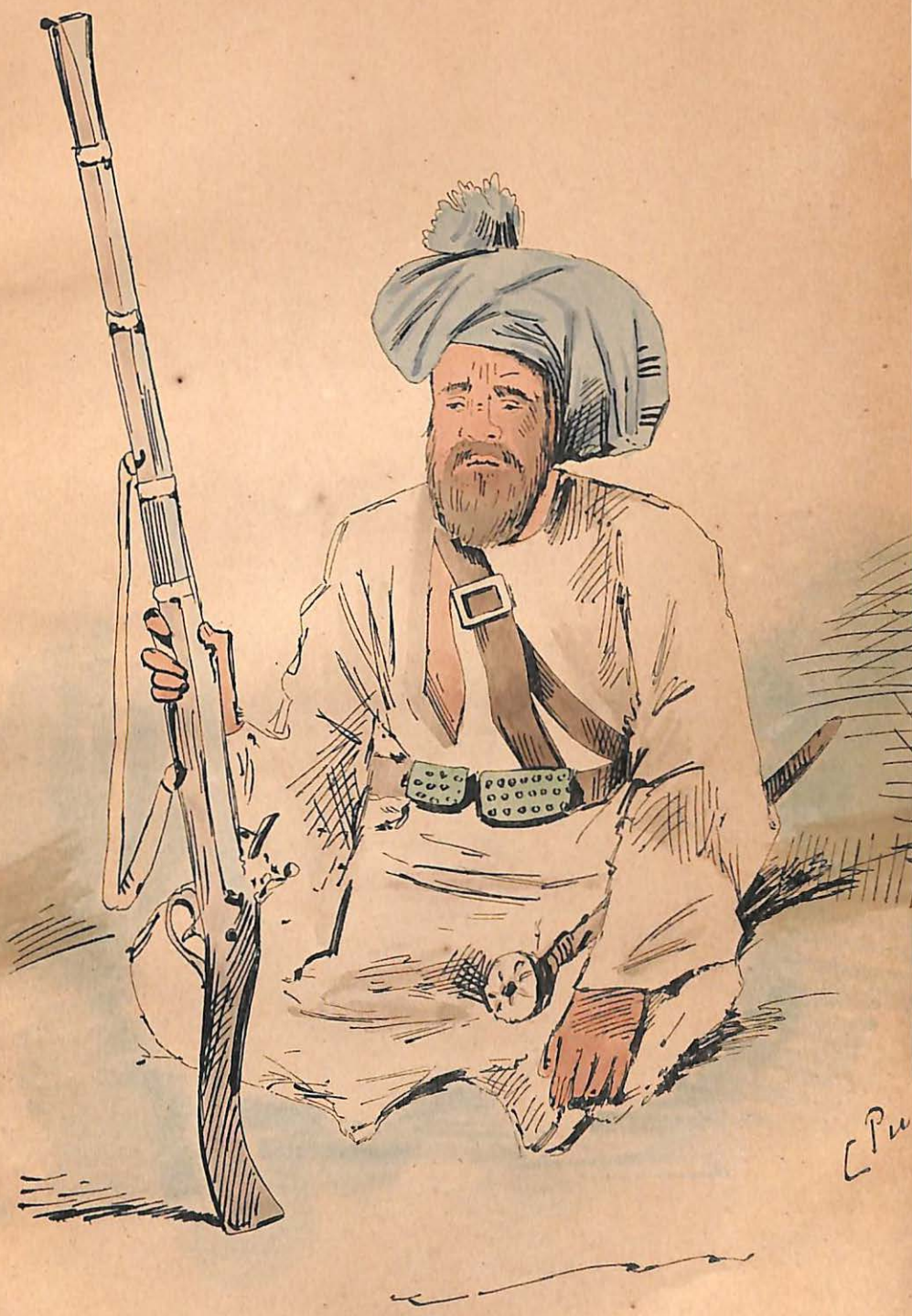
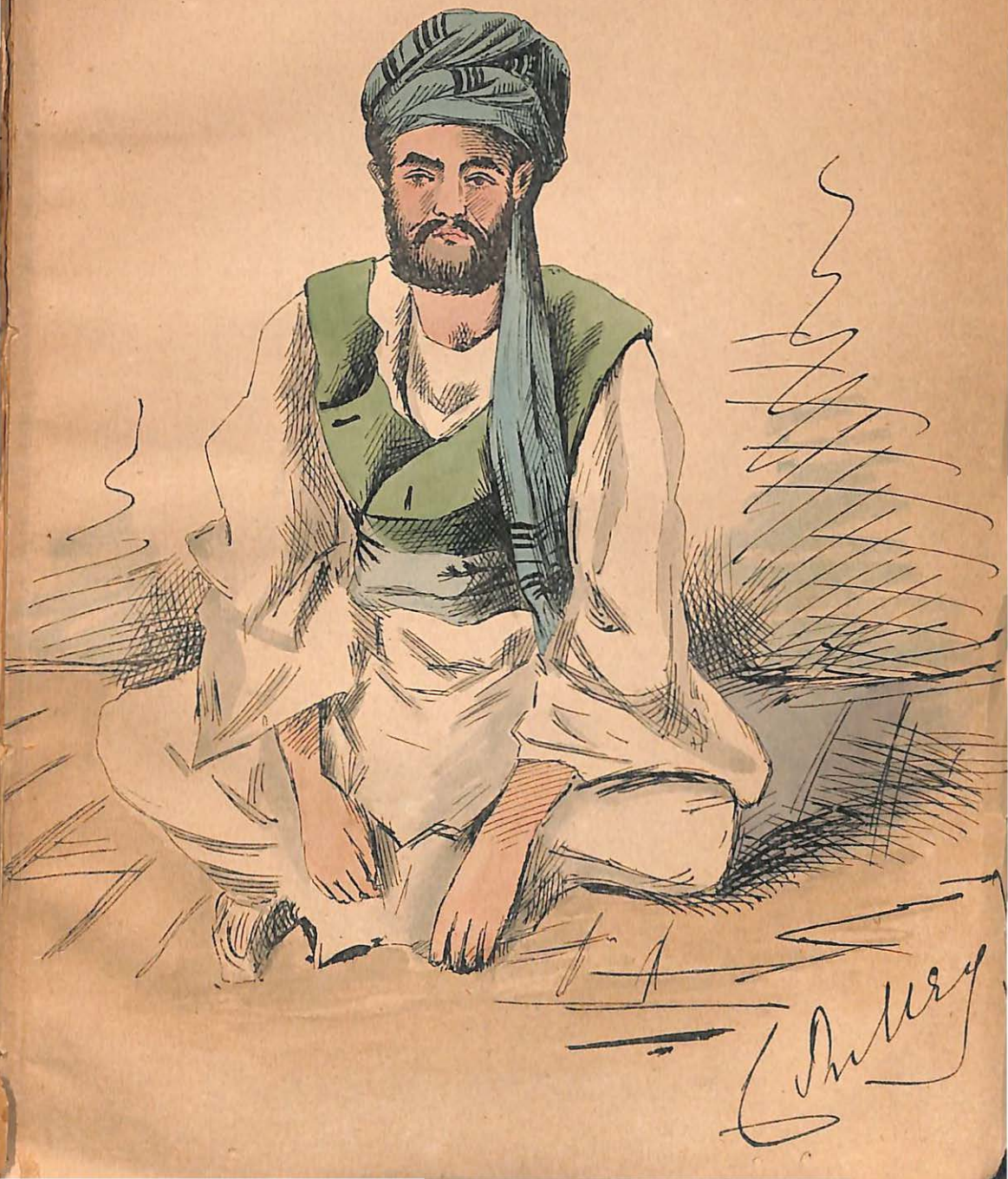
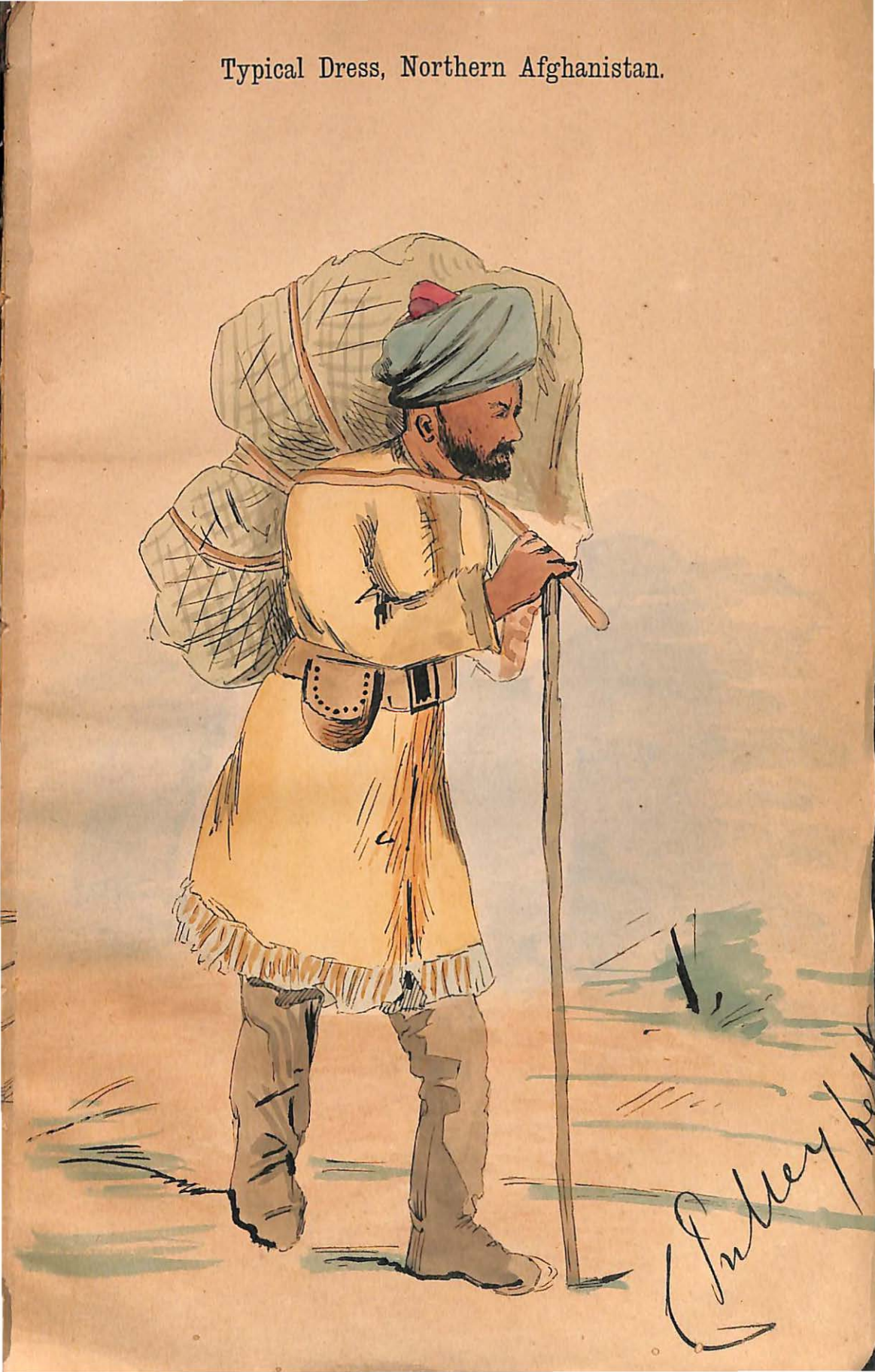


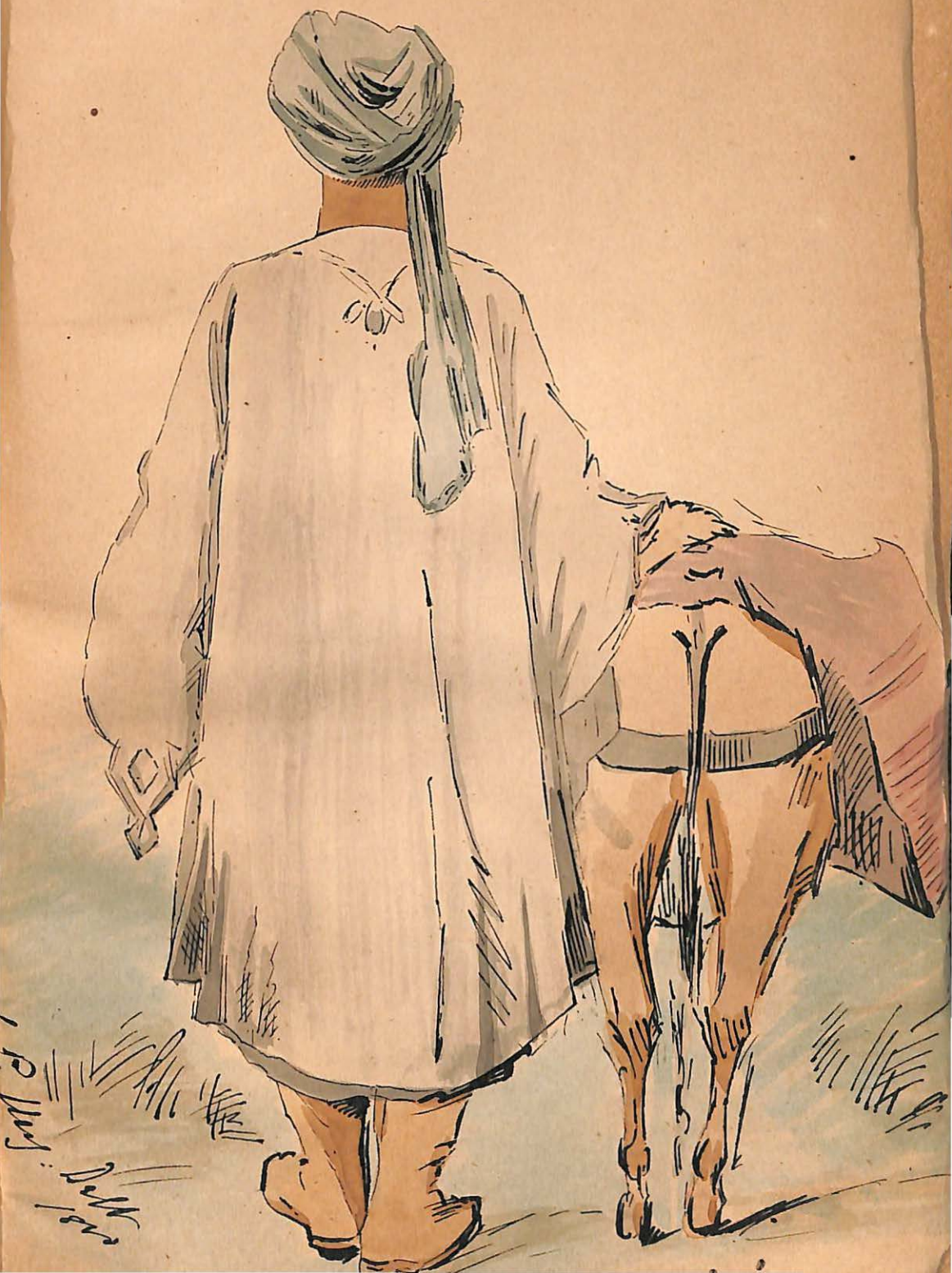
Kissil Bash.



Typical Dress, Northern Afghanistan.



Typical Dress, Southern Afghanistan.



Physicians.—Aside from a Kazzilbash or two who ply the profession, the Tajiks are the chief hakeems. Educated in the ancient Aristotelian system of therapeutics, their craft, with few exceptions, is a system of empericism, and nature the *vis medicatrix.*

Esculapian Somaticism pervades every thought, the beauty of the human frame is their reputed shibboleth, precluding any approach to conservative surgery. Although this dogma is keenly propagated, surgical interference is keenly appreciated.

Priests.—There is no caste limit to this.

Each man has his trade, which is chiefly cultivation or merchandize. This is keenly pursued during the eight months when snow does not prevent active labor. In winter a few educated men read to "Social Bees." Much time is spent in chatting with their women, romping with, or pulling the cradle of their weans. During the cold weird months, when snow rules the roast and man's external work is checked, even the most careless pray devoutly: the Logarites have a proverb that it's a grand four months for the priests.

Their burial and nuptial rights are in accordance with their type of Mussulmanic religion.

Marriage is usually celebrated in August and September when harvesting is over. The dark wintry days are metely chosen for the honeymoon.

Religion.—The Afghans and Tajiks are Sunnis, the Hazaras and Kazzilbashes, Shiahs. I have no correct data by which to estimate their numerical ratio, but they rank as enumerated Afghans, Tajiks, Hazaras, Kazzilbashes.

The belief in present salvation from impending misfortune by a distinctive vicarious sacrifice is tenaciously clung to. This is alluded to in Bellew's mission as occurrent among Afghans generally.

When a national disaster caused by an epidemy such as cholera is threatened, a scape-goat is selected. After marching around the area of his diocese, the priest burdens the innocent with the sins of the people, and drives it away into the wilds as an acceptable piacular saviour.

If a family calamity threatens, the passover is instituted, an unspotted lambling is marched round the dwelling of the sick, and then gralloched. The blood is sprinkled over the lintel and door-posts to propitiate the "Destroying Angel," while the priests and assembled multitude cry aloud for Allah to hasten his steps along the stars, and spare their beloved one.

The transference of disease, of which these ceremonies are the outcome, is beautifully described in the Emperor Akbar's Diary in the Turki language, where it is recorded that his son was moribund at Delhi (in, if I remember, 1535). The old man bent with grief, solemnly paced round his favorite son's couch, invoking God to accept him as a sacrifice and spare his Alesolam. The Turki-patriarch-Emperor died. His son lived. This historical fact must have handicapped priestly power, and may account for the stimulus sacrificial agency is regarded as having among the Afghan brotherhood.

Conservancy.—The entire Afghan race are very careless in these matters. Some of the villages in the Logar Valley reek foulsomely. Detrite and exuviæ are seldom removed any distance. The snow stored in pits and retailed in camp is frequently redolent with ammonia.

Climatology.—Time is reckoned from Mussulman New Year's Day (20th March). From mid-February to middle of April it rains incessantly, thence to 15th July clear weather with an occasional cloudy day is the rule: then comes a short sub-tropical summer of a month's duration, followed by two months' fair, but sometimes very cloudy, weather, during which the early morning hours are very cold; but the sun is still a warm orient ray.

Snow falls by the end of October, and clothes the ground 3 to 5 feet deep until February. Heavy northerly winds scour the valley; curling snow wreaths many yards in height. Throughout even the warmest months the nights are ever cool.

Careful thermometric observations were recorded during May, June, and July. The result is summarized:—

	Maximum.	Minimum.	Daily range.
	F°	F°	F°
May ...	90	33	80·2
June ...	103	51	96
July ...	97	51	87·3

The maximum thermometer was slung in a Kabul pal tent, opened on all sides, 3 feet from ground.

The minimum was placed on a board in the open air.

Earthquakes are common enough in March and April. They run across, never along, the valley, and are locally ever regarded as the precursor of misfortune.

Thunderstorms are frequent during these months, hail-stones fall as large as a pigeon's egg, seldom injuring man or beast. Both are betimes killed by lightning.

Dust-whirls are very frequent during our three months' tour in the valley. They were remarkable for their impetuosity and columnar length. The electric drift was invariably from right to left.

The atmospheric air was in June remarkably pure. The heliographic flash was read at fifty miles distance in a bee-line.

The economic crops grown in the valley are:—

Ajwain	...	Sperkai.
Bean, field.		
Barley	...	Urbush.

Three varieties, all awned and white-grained; *kunduri*, large grain; *termai*, small grain, sown in autumn; *bari*, the smallest grain, sown in spring.

Buckwheat	...	Gul-taj-hurrus.
Clover	See burga.	Drebulga.

The Dutch only is sown; the white English variety is met with, but is not cultivated as a crop.

Cabbage, blue drum-head...	Kurm Kalla.
Cauliflower, large ...	
Carrots ...	Gajur.
Coriander ...	Cashneesh.
Cummin (scarce) ...	Zeera.
Cucumber ...	Bodrung.

Fair varieties long *turai*, short *kareela*, small bodrung, melon-shaped shinkai.

Dill ...	Shibath.

Dalls. Fair varieties moong, *mai*; massur, *nask*; urud, *mash*; moth, *wassung*.

Egg-plant ...	Bamfan (?)
Flax, linseed ...	Tuggur.
Fennel ...	Badian.

This I also found growing as a wilding six feet high in the Sher-i-Dan Pass and on the Logar hills.

Garlic ...	Seer.
Gram, white ...	Nakbut.
Joar, large millet ...	Joar arzan.
Lettuce ...	Cav.
Lucerne ...	Shieftal speshte.
Leeks ...	Gandana.
Maize ...	Joari.
Madder ...	Rodang.
Melons, Water, two varieties, large	turbooz, long thin tindwava.
„ Musk ...	Gurma.
„ Rock ...	Gurda.
„ (pumpkin) bottle-necked	Kadu-surai.
„ „ round	Kadu, loki.
Mustard, three varieties, brown	*Auri*.
rape	*Kuzwah* tara meera.
	Turbuk.
Onion, blue and white, large	Bari.
small	Tirmat.
Poppy ...	Kash.
Raddish.	
Rice ...	Inudula wridze.
Rye? ...	Javdez.
Sago, pot-herbs ...	Palak, chulai, bathu.
Tares ...	Shakal.
Tobacco, broad leaf ...	Karami.
„ narrow leaf ...	Logari.
Turnip ...	Shulgum, white, Angrezi; blue, Kabuli.
Vines.	
Wheat ...	Gonum.
Red Anned ...	Salmi.
White. ...	Awai.

There are three varieties of awai—

Sufaid cha, large, white grain, } both awned and sown in autumn.
Surk cha, small, red, }
Kalak, small, red or white grain, aurilers sown in spring.

The rotation of crops is well understood. Cereals and grass are grown on the same fields at an interval of two years. They manure with human dejecta and horse droppings. Cow and camel excrete are chiefly used for fuel. No field within the pale of irrigation lies fallow. Vines, the gandana leek and madder are top-dressed before the snow falls. Their agricultural system may be thus summarised: the ground is

ploughed, manured, watered; ploughed a second time. The seed is then sown, and from its briaring until it ripens water is plentifully irrigated through the crops.

Wheat and allied grains are not, as in England, artificially desicated. Irrigation is cut off and the piercing solar ray hardens and dries the grain in the ear.

Farmers reckon on two principal crops—the spring, bari; and winter, termai—corresponding, allowing for climatic influence, with the khurreef and rubbee of Hindoostan.

The bari crop is sown about 30th March, and harvested in July. The termai sown about 20th October, and is also cut in July. An intermediate crop reckoned as *bari*, consisting chiefly of succulent vegetables, rice, and fodder for cattle, is sown early in June, and reaped about mid-October. The root of the madder does not ripen until it has been four years in the ground. Fennel attains a harbaceous character, and yields four years.

Garlic, onions, and moth dall grow equally as spring and winter crops. The gandana leek is really an onion which has been trained as a perennial producer. The corm is left in the ground and the leafage used as leeks. The old corm shoots out cormlets, and from these fresh leeks annually spring.

I summarise the bari, termai, and intermediate crops :—

The *bari* operations commence with the sowing of gandam, salvu, and jow bari in the latter end of March. Buckwheat; dalls—urud, moong, massur, and moth—tares, field pea and bean, rape, mustard, linseed, ajwain, coriander, egg-plant, pumpkin (kadu, auri) are sown early in April.

The termai crops are sown on 20th October, and reaped in middle of July. They consist of kalak, surk cha, sufaid cha, wheat, kunduri, and termai barley, poppy, lettuce, small onions, palak, chulai, bathu, and tara meera.

The intermediate crops (bari) sown on 1st June and cut about 20th July are musk, rock, and water melons, white onions, dill, fennel, beet, cabbage, cauliflower, cucumbers, pumpkins, turnips, carrots, raddish, maize, joar, rice, lucerne, clover.

There is a species of barley called *jowder*, which resembles rye so very closely, I am at present unable to detect any difference. It may possibly be a hybrid. The farmers tell me it is cultivated on arid soil by the poorer classes. The grain is dark outside, whitish internally. The flour and chapaties made of it are black. Jowder is reputed to have originally grown of its own accord among the wheat fields.

Lucerne yields eight crops annually: the autumn one is twisted into ropes of hay, and stored.

Nomadic Arabis from Jellalabad district reap the Logar crops, receiving one sheaf of wheat or barley in twenty as a wage.

DISEASES.

The prevailing affections of the valley, arranged in accordance with official nomenclature, are:—

General Diseases.

Fever, continued.—"Damana" with paralysis as a sequel, prevalent in winter.

Fever, febricula.—Extending over a few days.

Fever, ague. Quotidian.—"Nobutta" recurring daily.

Fever, remittent.—Running an indefinite course, frequently associated with derangement of spleen and mucus dysentery.

Treatment.—In quotidian and remittent quinine is used, the value of which is appreciated.

Cholera, "Wabba," "Jula"—is usually regarded as contagious. During the last thirty-eight years it has visited the Logar Valley four times. On two occasions it came from Kandahar-Ghazni road and twice from the Jellalabad-Kabul route. Last year it invaded from Kabul: some 800 died. The Tajiks, who are the chief carriers of goods, always suffer most. The Hazaras, who live much more huddled together than their neighbours, follow next. Men die in a greater ratio than women or children.

Treatment.—Nil.

Measles.—Prevails in spring.

Small-pox.—I saw several discreet cases. Inoculation is practised.

Rheumatism, acute—

muscula
lumbago } The treatment is bed-i-musk, rest, and warmth.

Syphilis.—Three cases of secondaries were treated. I think it rare.

Leprosy, true.—One case seen; rare.

Tumors, fatty and fibrous, only excised.

Frost-bite.—Infrequent.

Local Diseases.

Anemia.—Bloodlessness, chiefly after fever.

Chlorosis.—Functional derangement in women.

Dropsy.—Occurrent in winter after long exposure to cold, usually associated with hepatic or splenic derangements.

Catarrh.—Cold in head and chest.

Treatment.—Tissues and warmth.

Burns, severe, with contraction of limb.—I successfully operated upon a girl who came from Sirdar Abdul Rahman's hakeem.

Swordcuts.—Many severe ones seen.

Dislocation.—One of shoulder joint reduced.

Wounds, gunshot.—Several operated on, bones excised, or bullet extracted.

Nervous Diseases.

Neuralgia.—Hermcrania; sciatica; trifacial (tic), induced by extreme cold and debility. Many were treated.

Treatment.—Injection of chloroform into nerve sheath, associated with nervine sedatives, usually caused permanent relief. All classes were extremely grateful. One man assured me he had been incessantly harassed for thirteen years; a second that he had travelled successively to Kuram and Kabul without benefit. Both were cured.

Paralysis.—Hemplegia: paraplegia: local paresis: chiefly after continued fever.

Treatment.—Many were cured: for all were, but one case, functional, and rapidly improved under nervine tonics, blisters, and electricity. A man who had been quite lame for months from effusion into sheath of sciatic nerve was able to run 100 yards after the sheath was slit, and the "current" applied for ten minutes. In a few days he was quite well.

The bulk of paralytic affections are precisely of the same character as occurs in the Punjab frontier after remittent and continued fevers; and are well nigh all curable.

Diseases of the Organs of Locomotion.

Ankylosis of joint.—This usually resulted from wounds necessitating a long period of rest, and the external ligaments of joint contracting.

Treatment.—Forcible rupture of ligaments and intermittent rest.

Diseases of Cutaneous System.

Eczema, Herpes Zoster.—Treatment: the first two were very intractable, being set in compact cases; the latter was speedily ameliorated.

Poisons.

Darnel.—Accidentally ground with wheat.

Datura.—Homicidally administered.

Bhang.—Voluntarily partaken of.

Treatment.—Quite a small epidemy of darnel poison came under notice; emetics and purgatives speedily restored matters I was assured of, but did not personally witness datura or bhang poisoning.

Diseases of Intellect.

Acute Dementia.—Only one case seen. She was incurable; regarded as possessed and kindly treated.

Diseases of the Eye.

Amaurosis.—Irremediable.

Cataract.—Patients averse to operation, but charmed at its success.

Pterygium.—Very common.

Virulent Opthalmia.—Especially in children.

Ulcer of Cornea.—From glare and accident.

Treatment.—Successful, but tedious. In one case of occlusion of pupil which had caused blindness, vision was restored in a few minutes, and raised a furore of gratitude.

Diseases of Chest.

Asthma, senile, associated with heart disease. Incurable.

Bronchitis, chronic. Chiefly among churrus-smokers. Partially remediable.

Pneumonia.—Inflammation of lungs. Chiefly in spring. Not generally fatal.

Phthisis.—Consumption. "Marz-i-Dik," reputed to exist in winter; only one moribund case was seen.

Diseases of Digestive System.

Piles, internal.—Very prevalent. Cures always excited extreme gratitude.

Pyrosis.—Indigestion of liquids, reputed common; one case seen.

Teeth.—Chemical corrosion of; caused by the prevailing belief of sulphate of copper being an infallible remedy for toothache and dental neuralgia. Granules of bluestone are stuck in between the incisors, which corrodes the dentine and ultimately destroys the teeth. This is the reason why such a remarkable number of men have lost their incisors.

Diseases of the Urinary System.

Calculus.—Rare. I saw no case of a resident in the valley. Several came from a distance. With Dr. Emerson's kind assistance I extracted one calculus from the urethra, and nine from the bladder of a Zurmut lad, four of which were loose and five sacculated in the wall of the organ. He had been unsuccessfully operated on six months previously. He was quite out of danger in three days.

Gonorrhœa is rare, but cases were treated.

Spermatorrhœa.—One case only.

Remarks.—I, at Major Clifford's request, opened a dispensary at Hissarak, which was well attended. Patients so soon as they began to recover seldom came empty-handed, offerings of vegetables and eggs were made abundantly. During our migrations in the valley it has been my custom to pitch a peripatetic dispensary outside a near village to send word a few hours previously, and at eventide take a mule with panniers and treat all patients who came. I feel much good was thereby done.

Diseases of Domestic Animals.

Horned cattle not unfrequently in summer are affected with "foot and mouth disease," eczema epizootica. It chiefly attacks the mouth, tongue, and cleft of hoof. The udders of kine only suffer slightly. Hoven from over-feeding is uncommon. The Hazara sheep are very liable to liver-fluke; the parasitic diostoma hepatica sometimes crowd the liver constituting "sheep rot."

Horses, mules, and asses are afflicted with catarrh, pneumonia, gripes, enteritis, stomach and brain staggers. The latter is, I believe, darnel poisoning. Camels are so regularly fed and carefully tended that they are little liable to disease.

Fowls suffer from "pips" which are excised; and dropsy of the gizzard, which is simply slit open.

Dogs get ophthalmia. Thread-worms are common. Tape-worm cannot be very well known in the valley. My attention was specially called to them at Zarghunshahr on this wise. A fakir, who was disliked by the villagers, was refused a fowl, whereupon he left the place, saying, "You let the kafirs have them, and refuse them to me! I curse the birds. Henceforth snakes will invade their bodies, and all shall die before the Ramazan." Two fowls were slain, when, to the astonishment of all, the birds were found full of snakes. These were the ordinary tape found in the fowl. No explanation would avail. The entire brood was sold off to the kafirs at about forty per cent. discount, and the irate fakir pacified.

APPENDICES.

Appendix I.

DETAIL OF FLORA IN LOGAR VALLEY.

		Alismaceæ.		
Sagittaria sagittifolia	...	Arrowhead.		
Botomus umbellatus	...	Flowering rush.		
		Amaryllidaceæ.		
Narcissus (species)	...	Yellow-white.		
		Amentiferæ.		
Salex vimialis	...	Osier.	...	Surk Bed.
„ caprea	...	Babylonian willow	...	Bed-i-Musk.
„ tetrasperma	...	Willow	...	Bed.
Populus alba	...	Poplar.		
		Apocyneæ.		
Rhazzia stricta	...	Camel-thorn.		
		Aquafoliaceæ.		
Ilex parva (?)				
		Asparagaceæ.		
Asparagus (sp.)	...	Wild asparagus.		
		Aroideæ.		
Typhonum orixeuse	...	Typha-rush.		
		Berberidaceæ.		
Berberis vulgaris	...	Barberry.		
		Boraginaceæ.		
Auchusa officinalis	...	Alkanet.		
Lycopsis arvensis	...	Bugloss.		
Borago officinalis	...	Borage.		
„ (sp.)				
„ (sp.)				
Echium vulgare	...	Viper's bugloss.		
Myosotis palustrio	...	Forget-me-not.		
„ sylvatica.				
Heliotropium (species, unscented).		Heliotrope.		
		Caryophyllaceæ.		
Cerastium alpinum	...	Mouse-ear.		
Dianthus caryophyllus	...	Clove pink.		
„ (sp.)	...	Pink (white).		
Lychnis vespertina	...	White campion.		
„ diurna	...	Red campion.		
Silene inflata	...	Bladder campion.		
„ anglica	...	English catch-fly.		
Stellaria media	...	Common chickweed.		
Malachium aquaticum	...	Great chickweed.		

Characeæ.

Chara fragilis ...	Brittlewort.	
„ tennissima ...	„	
Vallisneria spiralis ...	„	

Chenopodiaceæ.

Chenopodium album ...	Goose-foot.	
„ ficifolium ...	„	
Salicornia herbacea ...	Glasswort.	

Compositæ.

Anthemis arvensis ...	Corn chamomile.	
Artemesia vulgaris ...	Mugwort.	
„ persica ...	Wormwood.	
Carduns nutans ...	Musk thistle.	
„ crispus.		
„ acanthoides.		
„ (sp.) (blue, small)	.....	Murdar Khan.
Centaurea cyanus ...	Corn blue bottle.	
Chrysonthemun sagitum	„ mangold.	
„ lencanthemum.	Ox-eye ...	Talkha.
Cichorium intybus ...	Chicory (blue).	
„ (sp.) ...	„ (white).	
Cincus lanceolatus ...	Spear thistle.	
„ conglobus(?).		
Helianthus annuns ...	Sunflower.	
Leontodon autumnale ...	Oporinia.	
„ hispidum ...	Hawkbit.	
Matricaria chamomilla ...	Wild chamomile.	
„ persica (two varieties).		
Onopordum acanthum ...	Cotton thistle.	
Senecio vulgaris ...	Groundsel.	
„ tennifolius ...	Ragwort.	
Sonchus arvensis ...	Sow thistle.	
Taraxacum officinalis ...	Dandelion.	
„ lœvigatum.		
„ leontodon.		
„ (several species).		
Tussilago farfara ...	Colt's foot.	

Coniferæ.

Juniperis communis ...	Juniper.	
„ squamosa.		

Convolvulaceæ.

Convolvulus arvensis ...	Bindweed.	
„ edulus.		
„ (sp.) (two-colored).		
Cuscuta pedicillata ...	Parasites on camel-thorn, wild rue, &c.	Dodder.
„ (sp.) ...		

Crassulaceæ.

Sedum purpurasceus ...	Orpine.	
Sempervivum teetorum ...	House-leek.	

Cruciferæ.

Barbarea vulgaris	...	Yellow-rocket.
Capsella bursapastoris	...	Shepherd's purse.
Cheiranthus cheiri	...	Wallflower.
Cochlerea officinalis	...	Scurvy-grass.
Crambe (sp.)	...	Sea kale (?).
Iberis amara	...	Candytuft.
(?) (several species)	...	Hedge-hog plant (?)
Lepidum campestre	...	Pepper-wort.
Matthiola (sp.)	...	Stock.
Nasturtium officinale	...	Water-cress.
Raphus raphanistrum	...	Raddish, jointed charlock.
Senebiera (sp.)	...	Wart-cress.
Sinapis juncea	...	Rape.
„ alba	...	White mustard.
„ (?)	...	(?) ... ... Seiah Dana.

Cucurbitaceæ.

Bryonia dioica	...	Red bryony.

Cyperaceæ.

Carex paniculata.		
„ rupestris.		
„ (several species).		
Eriophorum alpinum	...	Cotton grass.
„ vaginatum	...	Hare's tail cotton grass.
Sciapus sylvaticus	...	Club-rush.
„ lacustris.		

Elæagnaceæ.

Elæaguns (sp.)	...	(?) ... ... Sanjit.

Equisetaceæ.

Equisetum arvense	...	Horse tail.

Ericaceæ.

Arbutus (sp.)		

Euphorbiaceæ.

Euphorbia helioscopia	...	Sunspurge.
„ palustris	...	Spurge.
„ lathyris	...	Caper spurge.
„ (species.)		
Ricinus communis	...	Castor-oil plant.

Fumariaceæ.

Fumaria officinalis	...	Wild fumitory ... Shah-tarrah.

Fungi.

Pencillium glaucum	...	Blue mould.
Claviceps purpurea	...	Ergot.
Agaricus campestris	...	Mushroom.
Morchella esculenta	...	Morel.
Agaricus rubescens	...	Toadstool.

Gentianaceæ.

Gentiana montana	...	Hill gentian.

Geraniaceæ.

Geranium sylvaticum ...	Crane's bill.
„ robertianum.	

Gramineæ.

A.

Clisantheæ.	
Paniceæ.	
a. Digitaria (sp.)	
b. Setaria verticillata.	
Chlorideæ.	
a. Spartina (sp.)	
Phalarideæ.	
(*a*) Phalaris (sp.) ...	Reed grass.
(*b*) Anthoxanthum (sp.)	Vernal grass.
Phleineæ.	
(*a*) Phleum (several species) ...	Cat's tail grass.
(*b*) Alopecurus (several species) ...	Fox tail grass.
Nardeæ.	
(*a*) Nardus stricta...	Mat grass.

B.

Euryantheæ.	
1. Stipaceæ.	
(*a*) Stipa pennata ...	Feather grass.
(*b*) Milnim effusum	Millet grass.
(*c*) Panicum miliaceum ...	Millet.
2. Agrostidæ.	
(*a*) Phragmitis communis ...	Reed.
(*b*) Poamma (species) ...	Marram.
(*c*) Calamagrostis (species) ...	Small reed.
(*d*) Agrostis (species) ...	Bent grass.
(*e*) Lagurus ovatus	Hare's tail grass.
3. Aveneæ.	
(*a*) Holcus (species).	Soft grass.
(*b*) Aira (species) ...	Hair grass.
(*c*) Trisetum flavescens.	
(*d*) Arrhenatherum (species) ...	Oat grass.
4. Testuceæ.	
(*a*) Melica (species)	Melic.
(*b*) Poa amma	Meadow grass.
(*c*) Poa (several species) ...	„
(*d*) Glyceria (species) ...	„
(*e*) Cynosurus (species) ...	Dog's tail grass.
(*f*) Festuca (species)	Fescue grass.
5. Hordeieæ.	
(*a*) Triticum repens	Couch grass.
(*b*) „ (species)	Wheat grass.
(*c*) „ arvensis & others ...	Wheat.

(*d*) Hordeum (species) ...	Barley.
(*e*) Lolium temulentum ...	Darnel grass.
(*f*) Do. (species)	Rye grass.
(*g*) Secale cereale ...	Rye.

C.

Sub-order unrecognized.	
1. Zea Mais ...	Indian corn.
2.	Tiger grass.
3. Several unrecognized species.	

Hepaticæ.

Marchanta polymorpha ...	Liver-wort.

Hypericaceæ.

Hypericum (species) ...	St. John's wort.

Iridaceæ.

Iris cyanus (species, two varieties, large and small)	Blue flag.
Iris pseud acorns (two varieties) ...	Yellow flag.
Iris albus (two varieties)...	White „
„ species (white and purple).	
Crocus aurens ...	Crocus.
„ bifloris ...	Blue.

Juncaceæ.

Juncus filiformis ...	Rush.
„ (species) ...	„

Labiatæ.

Ajuga reptans ...	Common bugle.
Calamintha acinus ...	Basil.
„ (species) ...	Wild basil.
Lamium album ...	White dead nettle.
„ purpureum ...	Red „
„ (species) montana(?)	
Lavendula vera ...	Common lavender.
Lycopus Europens ...	Gipsy-wort.
Melissa officinalis ...	Balm.
Melittis grandiflora ...	Bastard balm.
Mentha viridis ...	Spear mint.
„ piperita ...	Peper „
„ (other species) ...	Mint.
Origanum vulgare ...	Marjoram.
Salvia pratensis ...	Sage.
Prangos(?) ...	Komal, dried fodder, consisting of Prangos and Marjoram is prepared at Hyder Khel.

Legominasæ.

Astragalus verus v. Persicus ...	Milk vetch.

Astragalus glycyphyllos ...	Wild licquorice.	
„ hypoglottis (cardinal red color).		
Astragalus albus v. Acanthus (thorny).	...	Pushtu-Lewan, used for feeding cattle in winter.
Astragalus purpurens.		
„ aurens.		
Alhagi maurorum ...	Camel-thorn.	
Genista (species).		
Lupinus albus ...	White lupin.	
Cassia (species).		
Medicago sativa ...	Lucerne.	
„ (other species)...	Medick.	
Lathyms hirsutus ...	Vetchling.	
„ pratensis ...	„	
„ palustris ...	„	
Trifolium repens ...	White clover.	
„ pratense ...	English purple do.	
„ (species) ...	Clover.	
Vicia hirustus ...	Vetch, hairy tare.	
„ tetiasperma ...	Smooth tare.	
„ sativa „ lathyroides „ (other species) ...	Vetches.	
Pisum sativum ...	Field pea.	
Vicia faba ...	Bean.	
Ervum lens ...	Lentil ...	Dhall.
Phaseolus (species) ...	Oored dhall.	
Cicer (species) ...	White gram.	

Lentibulariaceæ.

Penguicula vulgaris ...	Butter-wort.	

Lichenes.

Graphis elegans ...	Pictorial lichen.	
Gladonia digitata ...	Fucticose „	
Parmelia triliacea ...	Foliaceous „	
Other species.		

Liliaceæ.

Allium porrum ...	Onions.	
„ cepa ...	„	
„ (species) ...	Yield salep misri.	
Endymion nutans ...	Blue bell (white).	
Museari racemosum ...	Grape hyacinth.	
Lilium (species yellow).		
Tulipa sylvestris ...	Yellow tulip.	
„ rubra ...	Red „	
„ (species) ...	Orange and yellow.	

Linaceæ.

Sinum usitaticsum ...	Flax.	
„ (two species) ...	Wild flax.	

Lycopodiaceæ.

Lycopodium clavatum ...	Club moss.	

Malvaceæ.

Althæa officinalis	...	Marsh mallow.
Hibiscus tiliaceous	...	Hollyhock.
	...	(Three varieties—red, white, and variegated.)
Malva sylvestris	...	Common mallow.
„ rotundifolia	...	Hang dwarf „
„ vulgaris	...	Dwarf „
„ moschata	...	Musk „
„ (species)	...	(Variegated—pink and white.)

Musci.

Polytrichum commune	...	Hair moss.
Sphagnum acutifolium	...	Bog moss.
„ ampullaceum	...	„

Oleaceæ.

Fraxinus (sp.)	...	Ash.

Onagraceæ.

Circea alpina	...	Enchanter's nightshade.
Epilobium (sp.)	...	Willow herb.

Orchidaceæ.

Orchis masculata	...	Purple orchid.

Papaveraceæ.

Papava somniferum	...	Poppy.
„ rheas	...	Corn rose.
„ lecoqü	...	Poppy.

Plantaginaceæ.

Plantago lanceolata	...	Rib-wort.
„ media	...	Lamb's tongue.
„ alpina	...	Mountain plantain.
„ (other species).		

Polygalaceæ.

Polygala vulgaris	...	Milk-wort.

Polygonaceæ.

Polygonum fagopyrum	...	Wild buckwheat.
Rumex palustris	...	Common dock.
„ crispus	...	Curled „
„ hydrolapathirus	...	Great water „
„ (species).		

Portulaceæ.

Montia fontana	...	Blinks.

Primulaceæ.

Anagallis arvensis	...	Red pimpernel.

Ranunculaceæ.

Adonis autumnalis	...	Pheasant's eye.
Aquilegia vulgaris	...	Columbine.

Delphinium (species) ...	(Blue flower, many on spike.)
„ („) ...	(small white flowers.)
Caltha palustris ...	Marsh marigold.
Ranunculus acris ...	Upright crowfoot.
„ repens ...	Creeping „
„ arvensis ...	Corn „
„ sceleratus(?)	Celery leaved „
„ (two species submerged.)	Water buttercup.
„ (other species.)	

Rosaceæ.

Primus (species) ...	Slœ.
„ („) ...	Cherry.
Potentilla auserina ...	Silver weed.
Alchemilla vulgaris ...	Lady's mantle.
Geum urbanum ...	Avens.
Cratægus (species) ...	Hawthorn, May.
Pyrus malus ...	Crab tree.
Rosa canina ...	Dog rose.
„ arvensis.	
„ (species).	
Rubus (species) ...	Bramble.
Amygdalus (species) ...	Wild almond.
	„ apricot.
	„ peach.

Rubiaceæ.

Galium boreale ...	Bed straw.
Rubia perigrina ...	Madder.

Rubaceæ.

Ruba graveolens ...	Common rue.
„ Persica (?)	
Perganum haunala ...	? (Hermal.)

Saxifragaceæ.

Saxifraga (sp.) ...	Saxifrage.

Scrophulariaceæ.

Antirrhinum majus ...	Great snapdragon.
„ (species) ...	Small yellow.
Linaria elatine ...	Fluellin.
Digitalis purpurea ...	Fox-glove.
Euphrasia officinalis ...	Eye-bright.
Verbascum thapsois ...	Mullein.
Veronica officinalis ...	Speedwell.
„ beccabunga ...	Brooklime.

Solanaceæ.

Atropa belladonna ...	Deadly nightshade.
Solanum dulcamara ...	Bitter sweet.
„ melongena ...	Egg plant.
Capisicum annum ...	Red pepper.
Datura alba ...	Thorn-apple.
Hyoscyamus niger ...	Henbane.
Nicotania tabacum ...	Tobacco.

	Tamariscaceæ.	
Tamarix orientalis ...	Tamarisk ...	Gaz.
„ gallica ...	„ ...	Tazhar.
	Thymelaceæ.	
Daphne oleoides (?) ...	Mezereon.	
	Umbelliferæ.	
Angelica sylvestris (two varieties).	Angelica.	
Anethum graveolens ...	Dill.	
Ænanthe fistula ...	Waterdrop-wort.	
Æthusa cynapium ...	Fool's parsley.	
Daucus carota ...	Wild carrot.	
Cornium maculatum ...	Hemlock.	
Coriandrum sativum ...	Coriander.	
Foeniculum officinale ...	Fennel.	
Cuminum cynimum ...	Cumin.	
Carmu ajowan ...	Ajwain ...	Omum.
„ (species) ...	Wild ajwain.	
Myrrhus odorata ...	Sweet cicely.	
	Urticaceæ.	
Ficus carica ...	Common fig.	
Cannibis sativa ...	Indian hemp.	
Morus alba ...	Mulberry.	
„ indica.		
„ (other species.)		

Appendix II.

FAUNA OF THE LOGAR VALLEY.

VERTEBRATA.

Indigenous Mammals.

Deer, ravine	Oza	Markhor abu.
„ ibex		Abu koocha.
Fox, silver-tailed	Roba	Trorai.
Hedge-hog		Susgai.
Hare		Soeyah.
Hyena		Kafta.
Jackal		Shagal.
Jerboa, large		Mugguk prang } Mush-do-pa.
„ small		Peshuk prang } Mush-do-pa.
Leopard		Prang.
Mouse, field		Muggukurai.
Porcupine		Jeira skuur.
Rat, tufted-tailed		Mushi koorma
Wolf		Lewa.

Domestic Mammals.

Ass		Khur.
Camel		Q'ukh.
Cat		Pissoo.
Cow		Ghwa.
Dog, Collie.		
„ Terrier.		
„ (Pishtai).		
„ Sheep		
Goat.		
Horse		Psa.
Sheep, doomba		As.
„ Ghilzai.		
„ Hazara.		
„ Kohistan.		

AVES.

Indigenous.

Bustard, Macqueen's	Obarra	Tuloor.
Butcher bird.		
Crane, large		Koolan.
„ paddy bird		Khoz.
Cuckoo.		
Coot.		
Dove		Pahtak.
Duck, tufted		Surkhav.
Eagle	Lammerger	Baz.
Finch, bull, blue, chaff, gold.		
Fly-catcher, bird of paradise.		
Goose, black		Kulang.
Hawk, sparrow		Basba.
Hoopoe		Kallakorrah.
King crow.		
„ fisher.		
„ pied.		

Kite	Kulmung.
Lark, crested.	
„ field (varieties)	Mulaguck.
Martin, dusky.	
Magpie	Akka.
Merlin.	
Oriel, black naped.	
Owl, large desert.	
Partridge	Sissi.
„	Chikor tirk.
„ grey	Zinzirrah.
Pigeon, blue rock	Kabuter serai.
Quail, button	Khur boodana.
„ bush	Churungi.
„ field	Boodana.
Raven	Zach.
Robin, speckled variety.	
Sandgrouse.	
Snipe, common.	
„ jack.	
Starling, pied	Kurrakosh.
Swift	
Teal, large, golden necked	Sona.
Tomtit.	
Thrush	Agaoo.
Vulture, common, scavenger.	
Water hen, small.	
Wagtail.	
Widgeon	Kiskal.
Woodcock	Kurkurruck.
Yellow hammer.	

Domestic.

Duck (rare).		
Fowls, speckled, brindled, parti-colored.		
Falcon		
Nightingale, species } Songsters.		Baz: jurra! (for hawking.)
Thrush „ } Songsters.		
Quail		Boodana (kept for fighting.)

Pisces.

Cyprinus.		
„ silver and spotted	Orienus scimatus	Shermai.
Chiliva	Aspodisparia Morar	Golmai.
Mud-fish sucker? ...	... ...	Sagmai.

Reptilia.

Frog	Rana	Chandukka.
Lizard rock } in breeding		
„ sand } plumage.		
Snake		
Tortoise	Zucopsis! sp.	
...	... ...	Sangbukkach.

INVERTEBRATA.

Amebæ, species.
Ant, black.
„ red.
„ white.
Bee, humble (very rare.)
Beetle, scarabeus, large.
„ „ small.
„ ladybird.

Beetle, flying bug.
Butterfly, blue.
„ brown.
„ tortoise shell.
„ white.
Bug, body.
„ water.
Cecada.
Cineps, in gallnut, camel-thorn, apricot, and pistachia.
Cockchafer, large and small.
Criket, field.
Crab, river.
Fly, green and blue dragon, gad, house, May, sand.
Grasshopper (sp.)
Hornet (sp.)
Leech, horse.
Louse, body, head, field, water, wood.
Locust ... ... Malah.
Lymnea, lake.
Moths, large, medium, small (sp.)
Planorbis, lake.
Scorpion, common.
Slug, black.
Snail, common.
Spider, house, field, red.
Ticks, camel, horse, dog.
Wasp.
Worms, common, red, earth.