

where the first person he met would either murder or enslave him. Before they had found it convenient to do this, he escaped by night, and after many perilous adventures reached Heraut, and from thence Meshed.

When recovered from his fatigues, he again started in quest of me: but now by the route of the Persian Gulf, in company with his son, a fine boy of about twelve years. They took fever on the voyage, and were landed half dead at Kurrachee. Some kind gentleman found them there apparently dying on the strand, and had them conveyed to the hospital. When recovered, they got on board a passenger boat, and came up the Indus. They arrived in the utmost distress at Mooltan, whence Saleh wrote me, through the commissioner.

I had just left Huzara, and was, as I supposed, on my way to England, whither I was summoned by family affliction. All power to serve or to provide for poor Saleh was lost. Mr. John Lawrence, however, kindly interested himself in his behalf; and in spite of many difficulties the M. N. the Governor-General in Council, on hearing the particulars of his case, settled upon him a pension of £150 per annum.

The reader who has honoured my pages with his attention, will remember my description of the hopeful, light-hearted Saleh Muhammad. I found him sadly altered. So broken in spirits, from incessant misfortune, as scarcely to retain a capacity for hope. I left him residing at Hoshiarpoor, in the Punjaub.

Of the fate of the Kuzzauk brothers, I have not yet been able to gather tidings. I fear they were not rewarded as they deserved. Hussun Mhatoor was pardoned on my intercession, and the Kuzzauk guides were probably screened by him.

The result of this mission is now matter of history, yet so little known, that it may be worth while to record it. It is narrated by my successor at Khiva, Sir Richmond Shakespeare, in a paper published in *Blackwood's Magazine*, No. 320, of June 1842.

The promise of the Khaun Huzurut to release all the Russian slaves in his dominions on assurance from the Emperor that he would, on their release, set free the Khivan captives, had been communicated\* by me to the Court of St. Petersburg. To have released the Russian slaves while a Russian army was in full march upon Khiva, would not have stayed the advance of that army; the release of their slaves being the object least considered by Russia in the invasion. When, however, the severity of the season had discomfited the Russian army of invasion, and obliged it to retreat upon Orenburgh, the fitting time for their release was come; and Sir R. Shakespeare took advantage of it to persuade the Khaun Huzurut to send them all, under his protection, back to Russia. This was happily accomplished. Four hundred and sixty-three hapless wretches, who had lost all hope of ever again beholding their native land, were suddenly released from the most cruel slavery; were clad, fed, and provided with means of transport, and restored to their country, and to whatever Heaven might have left them of homes.

In return, six hundred Oozbegs and Toorcumuns, whom I had seen pining in the prisons of Russia, were, in like manner, released and sent home; and Russia was left without a plea for extending her empire 1,500 miles in the direction of India.

And thus, by the opportune agency of natural

\* See Appendix A.



causes, acting in concert with the prompt and ever-watchful zeal of our envoy at Heraut (the lamented and highly-gifted Major D'Arcy Todd) an expedition, which portended woe and disaster to Asia and to Europe, ended in peace and in blessing to the oppressed.

To Major Todd, therefore, the nation owes the only benefits purchased by all the blood, treasure, and national prestige expended in our first expedition to Cabul ; and leading indirectly to the second Sikh war, and to the Sipahi mutiny of 1857. For he it was, who, by effecting the release of captives on either side, enabled the Emperor of Russia to free himself with honour from a painful dilemma ; and who retarded by five-and-twenty years the march of Russia to the Hindoo Koosh.

In the brief period of which this record treats, the Author may be said to have reaped the experience of years. He had the advantage of viewing events, that ordinarily are widely severed, brought together into closest contrast. The one great object of his search through life he kept constantly before him ; endeavouring to divest his mind of early prejudice, and by rigid analysis to separate the fine gold of truth from every base alloy. Viewing his anxieties and sufferings as the means to such an end, he did not style pain "evil." He deemed not his own individual interests worthy to interfere with that grand scheme of Providence, which has been arranged by an all-wise Intelligence for purposes and upon a plan inscrutable to human sight. Still less did he believe that the being he had received from his Maker could ever be lost from the memory of his God.

By a tissue of unlooked-for events he was carried

through all his difficulties, and his mission was crowned with success. The contrary result would not have weakened his estimate of Divine goodness, founded as it is upon no partial or confined view of the system around him : for, as he cannot but deem that period of suffering the most valuable portion of his life ; so, had he failed in his enterprise, the sense of having acted to the best of his judgment would have supported him.

But the scenes through which I passed were productive of further and gratifying results. I saw human nature in a variety of phases ; but the good was never eclipsed by the evil. Amongst the Oozbeks, the just, and kind, and honourable Khaun Huzurut, the generous and hospitable Mooraud Ali. Amongst the Toorcumuns, Khojeh Muhummud. Amongst the Kuzzauks, Cherkush Bae—calm, courageous, faithful, affectionate—and the wife of Ahris Mhatoor, an honour to her sex. Amongst the Russians I met goodness everywhere. Amongst the Herauties, Saleh Muhummud, one of the finest characters in the world, when I knew him, and my own poor servants, faithful to me amid a thousand perils and trials. But in my own country, and amongst my own people (let me name with reverence the name of Butterworth Bayley), I saw this goodness in its noblest dress.

END OF THE JOURNAL.



APPENDICES.

APPENDIX A.

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AT page 168 of the first volume, the offer which the Khaun Huzurut himself dictated to me to be borne to the Emperor of Russia, and which he made me write out in his presence, that it might not be forgotten nor misunderstood, has been recorded.

At page 149 of this volume, I have mentioned my interviews with the Russian Foreign Minister, Count Nesselrode.

A letter from the Secretary to the Government of India to Sir William McNaghten, for Major Todd's information, communicates as follows:—

“By a confidential communication received by the Mail of 4th September 1840, it appears probable that His Majesty the Emperor of Russia will cause an answer to be sent to the letter taken by Captain Abbott to him, from the Khaun Huzurut, to this effect, viz., That if he will at once and unconditionally release all the Russian subjects now in the territory of Khiva; if he will promise not to make any more Russian subjects captive, and will not molest the Russian caravans; and if he will also send three persons to be kept as hostages at St. Petersburg, the Emperor will abstain from any further attack on Khiva so long as these engagements shall continue to be observed.”

This letter was written before it was known that Lieutenant Shakespeare had persuaded the Khaun Huzurut to fulfil his promise, made through me to the Emperor of Russia, to release all the Russian captives, without awaiting an answer to his letter to the Emperor borne by me.

## APPENDIX B.

HAD we searched the Map of the World, 577 years ago, for the empire, or khaunaut of Tartary, we should have found its boundaries stretching northward to Moscow; southward to Delhi; reaching on the east the Gulf of Tartary; and on the west, the river Euphrates; a dominion larger than the present empire of Russia. If, in the present day, our eye is directed to a similar search, we find but the nucleus of that magnificent empire, in three small and comparatively powerless States; Khaurism (or Khiva), Kokaun, and Bokhara, of which the second is accounted the richest, and the first, the most warlike.

These States, which occupy a nearly square area of 900 miles on the east of the Caspian, being girt for the most part by deserts, and rude mountains, infested by predatory tribes; and being themselves in a state of barbarism, little above the condition of savages, are amongst the least known portions of our globe. Bokhara, indeed, by her traffic with Russia, has of late years in some measure disinterred herself from oblivion. But the designs Russia has long manifested upon Khaurism, have recently led to jealousies and hostilities, that have prevented the latter State from benefiting by intercourse with her more civilized neighbour. Kokaun and Bokhara do not belong to the province of the following remarks upon the geography and statistics of Khaurism.

2. BOUNDARIES OF THE KINGDOM OF KHAURISM, GENERALLY KNOWN UNDER THE TITLE OF ITS CAPITAL, KHIVA, OR KHAYWA—The boundaries of Khaurism are, on the north the small rivers Yem, Djem or Embah\*, and Irghiz, by which it is severed from the country of the Khirgheez, a tribe of Kuzzauks dependent upon Russia. On the south an irregular line from the river Attruck to Punjdeeh. On the

\* Russia has since seized the whole of Khaurism.

west it is the coast of the Caspian. On the east the terminal line is ill-defined, or rather imaginary, including, by a course nearly north and south about 350 miles of the sandy desert east of Khiva; then crossing the Oxus in the latitude of Bokhara, and thence stretching S.E. through a desert of sand, to the hill country of Herat and Caubul.

3. DIMENSIONS.—The mean length of the kingdom is about 750 miles, its mean breadth about 600. The area enclosed, 450,000 square miles.

4. ASPECT.—Few countries present so uniform an appearance: for with the exception of the short and narrow tract bordering the left bank of the Oxus, and the well-watered sands of Merv, Khaurism may be described as a wide desert plain, without rivers or springs, woods or mountains; where the plough has never turned a glebe, nor the wilderness yielded to the industry of man. This wide waste plain is not, however, such a desert as we read of in Lybia and Arabia, although from the latitude of Khiva to that of Merv, the plain is a broken and irregular surface of deep sand, for the most part destitute of grass; for even here, there springs a growth of brushwood, offering excellent fuel, and the thorny herb which the camel loves. And from the latitude of Khiva, to the northern limits of the kingdom, the soil is a firm clay stratum, resting upon shell-limestone, and covered with a low growth of wormwood and another dark brown herb.

5. The sandy surface is not cast into regular undulations, as might be expected, could its irregularities be ascribed to the action of the winds; but is broken into hillocks and pits, that defy theoretical speculation. The clay surface is sometimes quite level, but more generally swelling to form ravines, the course of which is nearly S.S.W. On approaching from Khiva the promontory of Mungh Kishlauk, the country is broken up, by some former operation of the sea, into wide level valleys, walled in by cliffs of chalk and marl, surmounted by the aforesaid shell-limestone and clay. The isthmus between Mungh Kishlauk and the Bay of Tiouk Karasoo (on which stands the Russian fort of Nuov Alexandrof) is a triple chain of mountains of red sandstone, not less than 1,500 or 2,000 feet higher than the level of the Caspian. These and the mountains of Balkaun are the only hills I could learn of in the country; but the plateau between the Caspian and Aral seas has, by my estimate, more than 1,000 feet of elevation, and the Russians speak of still higher land, lying immediately south of the Yem or Embah. There



are also one or two trifling limestone summits on the eastern banks of the river Oxus, and about forty miles north of Khiva, and it is said that gold was once found in these, although the formation promises no such product.

6. CLIMATE.—The climate of Khaurism is more various than its surface or extent would lead a stranger to anticipate. On the table-land of the isthmus of Khaurism (*i.e.* between the Caspian and Aral seas) the snow of winter lies during five months, to the depth of four or five feet, and the thermometer sinks to 40° of Reaumur. Even at Khiva, the river Oxus is hard frozen during four months, although the latitude corresponds with that of Rome; and snow lies for several months, melting in the sun's rays, but so hard congealed in the shade, as never to be compressible into masses; travellers, and those who cut wood in the wilderness, are frequently lost in snow-storms, when the snow will sometimes fall five or six feet in depth, and the air is so searching, that the warmest furs will not resist it. Water froze in the small room I occupied at Khiva at the distance of three feet from the charcoal fire; and even at mid-day, when the sun was unobscured, the vapour of my breath collected in large masses of hoar-frost and ice upon my beard and Tartar cap. Yet in summer, the heat at Khiva is almost insufferable; lincn clothes can scarcely be borne; and it is impossible to sleep beneath the roof. People exposed to the sun die in consequence. These great extremes terminate about midway between Merv and Khiva. At Merv, indeed, the heat of summer is sufficiently oppressive, as every ray of the sun is multiplied by the sands of the surrounding deserts; but in winter, although snow falls, it is immediately melted by the heat of the soil. Yet Merv, although 5° farther south than Khiva, has a higher elevation above the sea's level, as the course of its river attests. The cause of the excessive cold of Khiva may be simply explained. Khiva is situated midway between the frozen wastes of Siberia and the burning deserts of Arabia and Persia. The prevalent wind, therefore, is from the N.E., and blows over an uninterrupted waste of about 100°, covered in winter with ice and snow. The intense chill of this wind must be felt to be conceived. Any portion of the human frame exposed to it is paralysed and destroyed. Of the Toorcumuns sent to oppose the Russian expedition, numbers were brought back mutilated: some had lost an arm, others a foot, others the whole cheek or the nose. The lips, and even the tongue, were in some cases destroyed. The position of Khiva in the midst of a sandy desert renders intelligible the extreme heat

of the summer months. I regret that I cannot give the variations of the thermometer; my instrument was early begged of me by the Mehtur (Vuzeer), and I was so ill-provided with presents, that I thought it prudent to comply with the demand. The spring is described as being delightful, and the desert may sometimes be passed in the summer months, as it is always less sultry than Khiva, and is occasionally overshadowed with clouds from the Caspian. Such great extremes of heat and cold are undoubtedly trying to the constitution. Yet Khiva appears to be generally salubrious, at least it is found so by the Tartars and others, whose habits of life give them sufficient exercise. Even the lazy and inert Oozbeg seems to thrive. Upon the high table-land of the isthmus the heat is never excessive, being tempered alike by the elevation of the soil, and by clouds passing between the seas.

7. CASPIAN SEA.—The Caspian, although it forms the western boundary of Khaurism, can scarcely be said to belong to this realm; for the Yahmoot Toorcumuns of the Balkaun who navigate it, have thrown off allegiance to the Khaun Huzurut, and the boats possessed by other tribes of this race are few and extremely small. It nevertheless seems necessary to describe this sea or lake, because its navigation is of vital importance to the interests of Khaurism.

BASIN OF THE CASPIAN.—The basin of the Caspian is a shell-limestone, precisely similar to that which forms the plateau between its shores and Khiva. It is remarkable, that the whole of this immense mass, often elevated several hundreds of feet above the present level of the Caspian, contains but three shells, viz., the cockle, mussel, and spirorbis, which are the sole productions of the waters of the Caspian. It might hence be inferred, that the Caspian is at present depressed above a thousand feet below its ancient level; were not the supposition irreconcilable with the features of the neighbouring lands. Had these vast strata of shell-limestone been the deposit of the ocean, they must have contained other shells than those which they yield to research. They are therefore the deposit of the Caspian, not of the ocean, to which the Caspian could not have been united, when those shells were deposited. But the number of cycles requisite for their formation, and for so entire a change as has since happened to so wide a surface of the globe, is a consideration which leads back the mind, beyond the depth of its comprehension, in the ocean of Time.

EASTERN COAST OF THE CASPIAN.—The eastern coast of the

Caspian is generally smooth and shelving. The bays and gulfs are therefore extremely shallow, which does not agree with the great height of the cliffs of the north-east shore, seldom less than 500 feet above the level of the water. The water is remarkably clear, very salt, but not bitter. The immense volume of fresh water poured into this sea by the Volga, the largest of the European rivers, abates the saltiness of the northern portion; an effect further increased by the congelation of the waters during the winter months; when the Gulf of Mertvoi is frozen over, and ice of several miles breadth, extends along the coast, as far as the Bay of Balkaun, altogether suspending navigation in those regions.

PORTS OF THE CASPIAN.—The ports, if such they may be termed, on the eastern coast of the Caspian, are Nuov Alexandrof, in the inlet of Karasoo (or the black water), the promontory of Mungh Kishlauk, and the Bay or Gulf of Balkaun.

The most important port on this coast is the promontory of Mungh Kishlauk, a name belonging to a considerable district south and south-west of Nuov Alexandrof. It is hither that the Russian vessels from Astrakhan used to resort, to convey to that city the Bokhara caravans. It is distant about 480 miles from Khiva. It possesses no fixed habitation, but is well peopled by Kuzzauks, who here pasture their flocks of sheep and herds of galloways and camels. It is open to navigation about a month earlier than Nuov Alexandrof, and is in every respect a preferable port; the navigation from thence to Astrakhan being easy, and frequently accomplished in a single day. The island of Koolali, a small Russian settlement, is visible from hence, and within a few hours' sail. Koolali was girdled with ice when I saw it on the 13th April 1840. The Russians, about two years ago, landed at Mungh Kishlauk, and marked out the site of a fort upon the heights, but the foundation was never laid.

GULF OF BALKAUN.—The Gulf of Balkaun, taking its name from the mountains so called, is in possession of a tribe of Yahmoot Toorcumuns, who have thrown off allegiance to Khiva, and subsist by plundering the small craft of the Russians.

BAY OF KARA BEEGHHAZ.—The Bay of Kara Beeghaz lies north of that of Balkaun on the eastern coast of the Caspian. It does not appear to be much frequented as a port, and was not mentioned to me as such, when I was about to seek the Russian frontier from Khiva. Amongst other reasons may be that rush of the Caspian into this bay, which

was reported to Moravief by the Toorcumuns of the steppe, and which seems to have led to the supposition that the Caspian hence found a subterranean communication with the sea of Aral. It is difficult to account for such a rush of water from a tideless sea, if, indeed, the fact be correctly stated. Moravief passed close to the southern brink of a salt lake, called Kooli Derria-ab, sixty miles\* N.E. of the Bay of Balkaun. He was told that it was ten miles in length, and communicated with the Bay of Kara Beeghaz, in which case he probably made more North latitude at the outset than the maps of his route generally show. That there should be any rush of water from the Caspian to the Aral is impossible, the Caspian being 113 feet lower than the Aral; but springs probably follow the old course of the Oxus to the Bay of Balkaun, and may have given rise to the fable of a subterranean connection between the seas.

KINDERLINSK BAY.—This bay is still further on the eastern coast of the Caspian than that of Kara Beeghaz. I heard nothing concerning it whilst in Khaurism.

The Russians monopolize the trade of the Caspian; I may add, its navigation. As the sturgeon, the salmon, and another large and delicate fish abound in this sea, the fisheries are very valuable; and, so far as I can learn, the Russians have several hundreds of decked vessels, besides small craft, some employed in fishing, and the remainder in merchandize. Owing to the wide extent of shoal water on the eastern coast, the vessels are built without keels, but with round bottoms. The water in the inlet of Karasoo is extremely shallow.

SEA OF ARAL.—Of the Sea of Aral, it is difficult to procure any particulars from a people so barbarous as the Kuzzauks, who alone are familiar with it. The following are to be regarded rather as conjectures than established facts. The water is too salt to be drunk by man or beast,† excepting at the mouths of the rivers Oxus and Jaxartes. The water

\* Moravief's calculations of distances travelled by him are exactly double the actual measurement. He makes Khiva from the Balkaun Bay 674 miles, whereas it is 360, or twelve camel marches of 30 miles.

† Schuyler says that the soldiers of the Orenburg column invading Khiva drank the water of this sea on its western coast for two days without ill effects, but with rapidly increasing disgust. He himself drank it at the north-eastern corner, and found it brackish, but not strongly saline. Analysis gives it 12 parts of foreign ingredients in one thousand of water. He quotes its extreme depth at 245 feet near western coast; in the middle, 100 feet. On the east and south, he says, a man may walk into it for miles, and a strong wind from that quarter dries up much of its bed. The mean of several estimates give it 138 feet above the ocean's level. These I should be disinclined to trust, though it is probably higher than the ocean.

is shallow, but navigable by small craft. The eastern coast appears to be low, with occasional hillocks. The foot of the Ust Urt heights between the two seas gives elevation to part of the western shore.

At the mouth of the Oxus are many islands, and near the centre of the sea is one of considerable extent. Brushwood is found along the margin, but no timber is known in Khaurism, excepting where human industry has reared it in the neighbourhood of Khiva. Little, if any, wood is floated down the Oxus. The reason may be, the predatory habits of the tribes infesting its shores; but I could not learn of the existence of forests on the margin of this river, within the power of its current. The boats upon the Sea of Aral are merely small fishing craft, belonging to the Aral Oozbegs and Kara Kulpauks, dwelling on its coasts. They are few in number.

The name of this sea is *Dungiz-i-Khaurism*, or the sea of Khaurism. The name Aral is never applied to it by Asiatics, and belongs to a tribe of Oozbegs dwelling near that sea.

**RIVERS OF KHAURISM.**—The rivers of Khaurism are the Aumoo or Oxus, the Sirr or Jaxartes, and the Awb-i-Mowr, called by us the Moorghaub.

**SIRR OR JAXARTES.**—Of the Sirr I could learn little or nothing, during my residence at Khiva, being prohibited from intercourse with the natives. It is known only to the Kuzzauks who live on its borders, and the few merchants that pass from Bokhara to Orenburgh. Its waters are the glory and the life of the Tartar kingdom of Kokaun; but its course through Khaurism chiefly enlivens a desert of sand.

Meyendorff, who crossed it near its estuary, reckons the breadth there at 120 yards, or 360 feet, and its depth at 24 feet. But he believes the breadth to be much wider at Kokaun, because the river Komoun, one of its almost abandoned channels, carries off still much of the water, which it wastes in the sands, or deposits in insignificant lakes. If we suppose one-third to be the diminution, we shall have for the main stream of the Sirr 460 feet, the extreme depth being 24 feet. If we assume 12 feet as the mean depth, we shall have a section of 5,980 square feet, at a point where the river has some velocity of current, viz. at Kokaun.

If we now take Burnes's measurement of the Oxus, near Charjocee, viz. 650 yards, or 1,950 feet, with an average depth of 16 feet, we have a sectional surface of 31,200 feet, or more than five times that of the Sirr. If, therefore, at

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these points, the currents of the two rivers be equal, then the water poured into the plain of Khiva is more than five times that contained in the channel of the Sirr.

RIVER AUMOO OR OXUS.—The river Aumoo is to Khaurism what the Sirr is to Kokaun. It enters Khaurism by a sandy desert: but flowing onward, reaches a fertile clay plain, over which its waters are distributed by numerous canals. This plain is about 200 miles in length, by about 60 of average breadth, and produces grain for the supply of the bulk of the Tartar population, as well as for export to Khorussaun. In ancient times, the course of the Aumoo, after passing Khiva, was an abrupt curve, by which it rolled its waters into the Gulf of Balkaun in the Caspian. The river valley and channel are still in existence, to attest the truth of this statement; and the Russians talk of turning the stream into its former course, should they gain possession of Khiva; a work which, besides adding to the productiveness of the kingdom, would afford the convenience of river navigation from the Caspian to Khiva.

Of the Oxus, so much has been written in Sir Alexander Burnes' interesting narrative, that I shall content myself with the details of only those facts which came under my observation, and the observations naturally resulting therefrom.

When it is gravely asserted, that a large river did, some centuries back, follow a course very different from its present, so as to disembogue its waters into a sea, now severed from it by a desert of 350 miles, strong proofs will be expected in support of the theory; especially, when in order to such a termination, the river must have turned off suddenly, at an abrupt angle, from its direct course.

If, however, in addition to the records of the past, we have before our eyes the undoubted channel, through which the river flowed to that distant sea, it is impossible longer to withhold our credence, and we have only to reconcile (as best we may), the phenomenon with the established system of nature. An earthquake is one of those universal specifics which a philosopher would adopt, only when other expedients fail him. It is true, that earthquakes are more frequent than our brief space of existence leads us to imagine, but I do not remember an instance on record of so large a river as the Oxus having by such agency been deflected from its course; and although the power of an earthquake be quite equal to such an effect, yet I would not be the first to establish a precedent of this nature without abundant proof.

The subject cannot be fairly examined without the aid of a map of Khaurism. Burnes has not examined it, but has regarded the theory as absurd, and considers the channels existing between Astrabad and Khiva to be "remains of some of the canals of the kingdom of Khaurism, being supported in this belief by the ruins near them, which have been deserted as the prosperity of that empire declined."

But this support seems very feeble, inasmuch as the ruins spoken of would be deserted just as certainly if abandoned by the river, as by the failure of the canal; and, moreover, we need appeal to none, who have ever attended to the phenomena of large rivers, for the impossibility of mistaking a deserted canal for the channel of a river such as the Oxus; which, after hollowing out for itself a valley some miles in breadth, ploughs up a furrow a hundred feet deeper than the earth's level, and wide enough for a stream of 800 feet span. This valley and furrow I have myself seen, the latter filled with melted snow. Its course bearing toward the Gulf of Balkaun, in a situation where any detour to the north was impracticable, owing to high table-land. This channel was also seen by Moravief,\* lower down, and is spoken of by the people of the country as extending to the Balkaun. I conceive the fact to be so fully established by my own observation, and that of others, that I shall proceed to show how the Oxus might have abandoned its original channel, without any assistance from convulsions of Nature.

In the days of Alexander the Great, the course of the Oxus, after having been unusually straight, suddenly turned W.S.W., at nearly a right angle. What can have led to this deviation we cannot now determine. We know, however, that rivers do not always find a channel free of impediment, even when they have found the lowest level for their waters; and on the bank of the Oxus we everywhere meet with wide valleys walled in with cliffs, some of which cliffs are not above 100 yards in breadth. We also know, that every river seeks to plough for its waters the straightest possible course. That, under this attempt, its banks are constantly wearing away, and that its power to effect such a purpose is in exact propor-

\* Moravief twice encountered this river channel, first at the distance of 250 miles from the Gulf of Balkaun. We have to reduce his measurements of distance travelled to one half for a correct result; and again, he met with it at Bish Tishik, the wells of which are in its bed. He estimates the actual channel at 600 feet breadth, and the cliffs which scarp it at 90 feet; and he saw northward another line of cliffs following its course, which he supposes to be an old shore of the sea, but which were, probably, the scarps of the river basin.

tion to the strength of its current, and the abruptness of the angle it would overcome. Unless, therefore, the obstacle be a rocky mass, the straightening of any river's course is an inevitable operation of nature, and its deviation from a direct to a curvilinear course is the *phenomenon*.

Now, if we cast our eye upon the map of Khaurism, we shall see that the Oxus has merely obeyed a known law of nature; it has, by the efforts of we know not how many thousand years, worn out the curb to its onward course, and pursued the impulse hurrying it naturally toward the Sea of Aral. And if we observe the other feeder of this sea, the river Sirr or Jaxartes, we shall perceive, that after emerging from the hills, its course is a slight curve, bowing to the north. We shall also observe that there are a variety of forsaken channels south of this river, and that the southernmost, under the title of Djan Derriah, meets the Oxus on the south of the Sea of Aral. Now it is a necessary law of nature that when a river forms a variety of channels at a curvature, the outermost of these be the most recent; the innermost the most ancient. If therefore the Djan Derriah be not the original course of the Oxus, it has been formed by a convulsion of nature; but if nature has not been violated, then, some centuries back, the rivers Oxus and Sirr met, or almost met, a little north of Oorgunj. If they met, it is probable, that the Sea of Aral was a mere marsh receiving a small portion of the waters of the Sirr, and that the rivers continued in a single channel their course to the Caspian. In this case, the thrust from the N.E., of the waters of the Sirr, would have sufficed (without the aid of any extraordinary obstacle) to determine the future current of the Oxus to the S.W. But we perceive, that century by century, this thrust must have declined in power, as the Sirr naturally mined for itself a straighter course farther north; and in proportion as this deflecting power abated, the struggles of the Oxus would increase, to overcome its northern barrier, and flow in a direct channel. Moreover, the path deluged by the waters of the Sirr, would afford such a channel for those of the Oxus; and accordingly, we see that after forsaking the Caspian, the latter has turned in the direction of the Sirr, deviating many degrees from a straight line.

It is not to be supposed that such changes are sudden and instantaneous; that the old channel is dried, and the new opened at once. They are generally the work of centuries. Rivers plough, every year, a deeper furrow, or fill up part of that furrow. The channel, which is partially aban-



done, is every year more forsaken of its waters, which having found a lower level can no longer pursue their wonted course. In sandy deserts, the change is more rapid; for the partially abandoned channels are choked with sand: but in the case of the Oxus, which at its divergence occupies a firm clay bed, which it retains, I am informed, to the Gulf of Balkaun, it is probable that for more than a century, part of its waters continued to occupy their ancient course.

I have assumed that, which appeared to me the most probable, of the two alternatives. But even, if the SIRR never joined the Oxus, the gradual enfranchisement of the latter is a simple and constantly occurring process of nature; it may be added, an invariable process, where very great inequalities of level or where curbs of rocks are not the fetter. But the soil of this valley, as appears evident whenever a section is examined, is not only not rocky, but one of the most infirm as regards resistance to water. Its superficies is sometimes shell-limestone; but the stratum is seldom above two feet thick, and rests upon alternate strata of chalk and marl, of which the marl is often the basis. Marl derives from its argillaceous particles a strong attraction for water, which it imbibes thirstily, melting into the softest mud. Accordingly, the country, in the neighbourhood of these changes, is broken up, in the strangest manner, into wide level valleys, walled in with cliffs, any one of which, supposing its base not to be higher than the surrounding country, would serve as the basin to an extensive lake.

The greatest difficulty, in considering such changes, is to imagine a valley answering this description, sufficiently depressed below the channels of the SIRR and Oxus, to act as a receptacle for their waters. For these rivers having, time out of mind, ploughed the same furrow, might naturally be supposed to have penetrated the earth's surface, to a depth exceeding any neighbouring and extensive hollow. But, there is nothing unreasonable in supposing a suitable basin to exist; and we see that it does exist, and have no proof that its existence is attributable to any disorganization of nature.

Again, finding it to exist, and to be the receptacle of two rivers, we find it difficult to imagine a time when it was a mere valley. But when the waters of the SIRR flowed through their southernmost channel (the Djan Derriah) some obstacle, such as a range of cliffs, of which there are so many in that neighbourhood, may have cut off the SIRR from this

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valley, as, there can be little doubt, they cut off the Oxus from it. For we need not observe, that rivers do not hollow out, but rather fill up their receptacles, by the sediment from their waters ; so that the sea of Aral must yearly be growing shallower, in proportion as its river channels deepen : an effect, that may, some thousand years hence, force the rivers to seek a new course, or to resume their old channel to the Caspian.

The theory, which supposes the Oxus to have always poured a portion of its waters into the Sea of Aral, is utterly untenable : a river will never hesitate many years between a straight and a devious channel. The instant the Oxus found a straight course for any portion of its waters, all its power would be put forth to enlarge and deepen that course, to the neglect of the other. But if we go back to the time when both the Sirr and the Oxus were first let loose upon the plains of Tartary, and imagine the two streams meeting simultaneously at a point, a few miles south by west of the Sea of Aral, we shall perceive, that their natural tendency from that spot would be to a course west by north, from which they must be deflected by the high table-land they would meet in latitude  $42^{\circ}$ , which would determine their flow to the Gulf of Balkaun. There is, therefore, no need for convulsions of nature or prodigies, to account either for the original or the present course of the Oxus. Both are in perfect accordance with observed laws of nature ; and the ancient channel exists to this day, to bid defiance to all scepticism upon the subject.

With regard to the very generally received notion, that there exists a subterranean communication from the Aral to the Caspian, it may suffice to observe, that the old channel of the Oxus to the Caspian is the lowest land of the Kara Koom, or desert of Khaurism ; it is, therefore, the natural drain of all that country ; and the report of travellers hearing sounds of subterranean waters at Kara Goombuz may be perfectly true. It seems, however, improbable, that the Sea of Aral should have any access to this drainage ; and the waters there heard may be supplied by the snow and rain, which fall in considerable quantity between the seas. The waters of the Aral are so shallow that the evaporation from its surface, during six months, is probably greater than from any other considerable lake of which we know. A circumstance qualified by its state of congelation during four or five months yearly. Whether the evaporation from its surface, during seven months, be sufficient to dispose of the large

body of water poured during twelve months into its basin, is an interesting problem : for the solution of which, however, I have not sufficient *data*.

A rough calculation may be made of the quantity of water poured annually by the Oxus and Jaxartes into the Sea of Aral. Burnes, by an erroneous calculation, rates the average depth of the Oxus at nine feet. The data he offers, give us for the depth, by one measurement, twelve and a half feet to a breadth of 2,469 feet; by another, sixteen feet to a breadth of 1,950 feet. He calculates the flow at 6,000 feet per hour. The mean of these calculations would give us a breadth of 2,209 feet, a depth of fourteen feet, and a velocity of 6,000 feet per hour. At this rate, it would discharge hourly into the Aral 1,855,556,000 cubic feet of water; daily, 44,533,344,000 cubic feet; and yearly, 16,354,670,560,000 cubic feet.

Assuming Meyendorff's measurements of the river Sirr near its termination—viz., breadth, 360 feet; average depth, 20 feet; and allowing it a current equal to that of the Oxus, viz., of 6,000 feet per hour, we shall find that the Sirr discharges into the Sea of Aral, hourly, 43,200,000 cubic feet of water; daily, 1,036,800,000; and yearly, 378,432,000,000.

The Aral Sea, therefore, will receive yearly, from these two rivers, 16,733,102,560,000 cubic feet of water. And as the Aral is about 360 miles in average length, by about 240 miles in average breadth, the surface is an area of 86,400 square miles, or, 2,408,693,760,000 square feet. So that, were there no loss by evaporation, and absorption to the Aral, it would rise annually, from the supply of its rivers alone, about seven feet. To this we must add the melted snow and the rain from the steppe around, and falling annually into this sea. And as the tributary steppe may be roughly estimated at - - - 300,000 square miles, and the Aral at - - - 86,400 " "

The Total will give - - - 386,400 " "  
 or - - - 10,772,213,760,000 square feet.  
 Rating the rain and snow upon this surface, that, at least, which reaches the Aral, by rivers, rills, or otherwise, at a foot upon each square foot of surface, we shall have an addition of four feet five inches more to the height of the Aral. This, added to the water from its rivers, would raise it yearly about eleven feet six inches.

The question is, whether the yearly evaporation and ab-

sorption are sufficient to carry this off. If not, the surface of the Aral must be increasing. For about four months in the year the evaporation is very small, owing to the half-frozen condition of the sea. During about two months more, it is not considerable, owing to rain and foggy weather. But for the remaining six months it must be very rapid, because the sea is so shallow as to be soon heated, and has around it on three sides an arid desert, the wind of which is excessively thirsty.

Thus Burnes's companion, Dr. Gerard, at Bokhara, a region certainly far hotter and drier than that of the Aral, found by experiment that a basin of water was wholly evaporated by exposure for forty-eight hours to sun and wind. It seems, therefore, probable, that the whole of the water received annually by the Sea of Aral, is lost annually by evaporation and absorption; and that the surface of this sea is neither spreading nor shrinking.

Burnes found by experiment that during the swell of the Oxus is held suspended in its waters 1-40 part of silt. Let us for an average,\* reduce this to 1-160, and reckon the silt of the river Sirr at the same rate, and we have 32,232,201,000 cubic feet of silt poured yearly into the Aral, raising its bed yearly 0.013 of an inch; or in 1,000 years thirteen inches. The average depth of the Aral is probably not more than 80 feet. It seems, therefore, impossible that its basin should retain for ever a capacity for the waters of its affluents—the Sirr and Oxus. Undoubtedly, the necks of these rivers, near the sea, must receive a large portion of this silt, and be rising yearly with the bottom of the Aral; a circumstance which may again compel the Oxus to return to its ancient course—to the Caspian Sea.

Meyendorff was shown a hillock near the north-east corner of the Sea of Aral, which he was assured was the not very ancient limit of the coast of that sea; although at present distant sixty versts (forty miles) from it. This tradition is utterly improbable. The Aral has of late years, only, received the tribute of the Oxus. And unless the Oxus and Sirr are disappearing from the earth, it is scarcely possible, that the Sea of Aral should be shrinking. The yearly deposit of silt must raise the levels of its waters and extend their surface. If, indeed, such a flood as that of Moray should deluge the mountains in which the Sirr and Oxus rise, the level of the

\* Burnes probably calculated by weight. I have reckoned silt at a specific gravity of 2,000.

Aral might be unnaturally raised, and its surface extended for a few years. But such a flood would most probably be recorded by tradition. When the Sea of Aral was a mere bay of the Euxine and Caspian conjoined, no limit to its extent is assignable. But this is a period far antecedent to historical record.

The waters of the river Oxus are pure. Its breadth opposite Khiva is about 900 yards, and is greater as it approaches the Sea of Aral; but there is a point above Khiva, where it is described as being narrowed to about 100 yards, and as being proportionately deep and rapid. It is navigated from its estuary to Bokhara and Bulkh, but during five months is frozen so firmly, that the caravans pass over the ice in security. The breaking up of the ice in the beginning of March, is heard to a long distance. The researches of Captain Wood, have proved, that the source of this river is a small lake, which he has named Victoria.

RIVER MOORGHHAUB, OR AWB I MOWR.—The river Moorghaub or Awb i Mowr (water of Merv) rises in the mountains of Ghor, and originally joined the Aumoo in the sandy desert of Kara Koom, after having fertilized the valleys of Punj Deeh and Yoollataun, and the sandy, but productive plain of Merv. But canals and drains seem to have been early constructed, for the diffusion of its waters: so that, during the last two or three thousand years, it has never advanced farther than the plain of Merv, being there entirely consumed in irrigation. The stream of this river is deep and rapid; its breadth at Yoollataun about fifty yards. At Punj Deeh, it receives the waters of the Khooshk rivulet, when the latter is not consumed in irrigation. It then flows through a clay valley, bounded on either side by sandy heights, and gradually opening into the plain of Merv. This valley was once cultivated, but is at present abandoned.

RIVER YEM, DJEM, OR EMBAH.—The Yem, Djem, or Embah, is a small river, whose waters are tainted by the saline productions of the sands, through which it flows. One of the streams near its source is tolerably pure, but even the bitter waters are drunk by the camels. I could not learn how high this river is navigable, but believe that boats of any burthen could be towed but a few miles up the stream.

RIVER IRGHIZ.—Of the rivulet Irghiz, forming with the Yem the northern limits of Khaurism, I could learn little or nothing. Neither of these streams contributes much to the

fertility of the land, and the waters of the Irghiz are probably as bitter as those of the Yem. The Irghiz is lost in a small salt lake, in the desert between Kokaun and Khaurism.

The seas and lakes form the most prominent features of Khaurism. The mountains are few: I saw only that chain of sandstone which severs the isthmus of Bucadri, Ig-dur (I name these after Arrowsmith's Map of 1st January 1841) from the main steppe. In that map they are called the Smoking Mountains. They appeared to me to be a triple ridge of sandstone, having a course north-east, and about 1,500 feet high. Of their composition, I judged by the *débris* at their feet, some enormous cubes of which had been worn by the weather into spheres. I did not see them emit smoke, nor hear of this phenomenon. I also saw the peak of a hill or mountain, apparently on the right bank of the Oxus; and was told that formerly it yielded gold. I could not approach it to judge of its height or formation.

Moravief saw mountains at the Bay of Bulkaun. And of these I learned from Toorcumuns, that they produce the wild goat. He does not give their height, but states that one of the deserted channels of the ancient Oxus separates the greater from the lesser Bulkaun; the other river channel lying further south; both channels entering the Bay of Bulkaun. In this case, the range must be of small extent: nor does that which he details give an impression of any considerable altitude, for on surmounting the rocky margin of the bay, he sees the steppe of Khiva extended before him. He mentions lead and sulphur as the products derived from the mountains of Khaurism.

POPULATION.—The original population of Khaurism would seem to have been the Toorcumun and Kuzzauk tribes, whose descendants still form the bulk of the inhabitants. These were in subjection to a race of Persians (at present called Sart), who dwelt in the cultivated regions, when the kingdom of Persia extended to the Oxus. These have in turn yielded to the Oozbegs, the present lords of the soil. The following is a Table of the numbers of the several races at present owing allegiance to the Khaun Huzurut (or Supreme Lord) of Khiva.

	Families.	No. of Persons.
Oozbegs - - -	100,000	500,000
Kara Kulpauks - - -	40,000	200,000
Kulmauks - - -	6,000	30,000

## POPULATION.

	Families.	No. of Persons.
Sarts - - - -	20,000	100,000
Toorcumuns - - -	91,700	458,500
Kuzzauks - - - -	100,000	500,000
Total - - - -	<u>357,700</u>	<u>1,788,500</u>

The following is a more particular enumeration :—

## TOORCUMUNS.

	Families.	No. of Persons.
Yahmoot - - - -	12,000	60,000
Tukka - - - -	40,000	200,000
Chowdhoor - - -	12,000	60,000
Salore - - - -	6,000	30,000
Gogelaun - - - -	8,000	40,000
Saroke - - - -	9,000	45,000
Yumraulie - - -	2,000	10,000
Aulylie - - - -	1,000	5,000
Kara Daughlie - -	1,000	5,000
Ersarie - - - -	700	3,500
Total families of Toorcumuns	<u>91,700</u>	<u>458,500</u>

## OOZBEGS. †

Oozbeg - - - -	100,000	500,000
Do. Kara Kulpauk - -	40,000	200,000
	<u>140,000</u>	<u>700,000</u>
Kuzzauks - - - -	100,000	500,000
But there are in Khaurism, of slaves about - - - -	-	700,000
Of Koozulbaush, or Persian tribes, say	-	20,000
And it is probable that the Sarts and others may amount to - - - -	-	90,000
This would give a population to the State of Khaurism, of souls - - -	-	2,468,500
which is probably near the truth.		

This amount, distributed over 450,000 square miles, gives an allowance of about five-and-a-half persons to a square mile.\*

\* A different estimate is given by Vambéry, who visited Khiva fourteen years after me. I have confidence in mine.

The Oozbeks, Kara Kulpauks, and Kulmauks derive their origin from tribes bordering upon China. The Toorcumuns and Kuzzauks are evidently of the race which peoples a large portion of Russia, and of some other countries of Europe. They themselves deduce their descent from two brothers, the one, father of the Kuzzauks, the other of the Toorcumuns, who many thousand years ago, emigrated hither from the Don and Volga. The Kuzzauks are manifestly the Skuthoi, or Seythians, of Greek history. The Toorcumuns appear to be the Parthoi or Parthians; but it is difficult to assign any reason for these names, of which no vestige now remains amongst the people who bore them.

A small Toorcumun tribe, called Ata, dwelling on high sandy land between Khiva and the Bulkaun, is mentioned by Moravief, but as I did not hear of this tribe, I have not recorded its existence.

The native vegetable products of Khaurism are very few in number. Wormwood and the camel-thorn everywhere cover the steppe, whether the soil be sand or clay. Two or three varieties of shrub flourish in the sandy wastes. Of one of these, the stem grows to the thickness of a man's thigh, yet is so brittle as to be easily torn up by the root, and so dry as to kindle readily on the application of fire. The course of the river is marked by the presence of the tamarisk and sometimes by that of the willow: but although the poplar is very abundant in plantations, I am not sure that it is a native of the soil; and I believe that the fruit trees are all exotic. Turf is nowhere known. Grass grows in scattered tufts upon the sandy surface, but seldom in sufficient quantity to be collected. The food of all graminivorous animals, from the camel to the sheep, is the wormwood and camel-thorn.

In animal life Khaurism is much richer. The horse, indeed, can scarcely have been a native of pastures, so unsuited to his habits; and the breed possessed by the Toorcumuns is probably derived from Kokaun and Eastern Tartary; whilst that of the Kuzzauk may be from the Don and Volga. The more undoubted natives of the soil are the double-humped camel and the dromedary. The wild ass, and a small animal intermediate between the sheep and the antelope. The wild goat and wild sheep. The fox and wolf. The lion, tiger, leopard, and bear. The jerboa, and a larger animal of the same species. The wild hog and hare. The pheasant, partridge, and chuccore, or red-legged partridge. The quail, woodcock, and snipe. The wild swan, wild goose,



duck, and fowl. The raven, crow, and magpie; of the latter, large flocks haunt the wells of the sandy desert. The plover, lark, and kingfisher.

But although the horse may not be a native of the soil, the Toorcumun horse is held in such high esteem by all the nations of Asia, that some account of the several breeds may be acceptable. The Tukka and Yahmoot tribes are those, which possess the most celebrated horses. Next to these, are the Goklaun and Chowdoor tribes. The Oozbegs also have a celebrated breed, but I believe there are few of these reared in Khaurism; the best Oozbeg breed is at Shire-i-subz, in Bokhara.

The Tukka horse is of large stature, has a high and finely-arched crest, and is the handsomest and most generally esteemed of all the Toorcumun breed. But he is said to be deficient in sinew, and in this respect very inferior to the Yahmoot horse. The loss of some of my notes at the time of my captivity, prevents me from detailing the names of the several breeds belonging to the Tukka and Yahmoot Toorcumuns.

**YAHMOOT HORSE.**—The Yahmoot horse averages perhaps about 15 hands in height, is generally well formed, and remarkable for the strength of his sinews. These are very widely separated from the bone, and sometimes to a degree which, although it adds to the power, detracts from the symmetry of the limb. His head shows much blood. He is tractable and gentle, but full of fire. His powers of endurance are very great, and he will eat the driest and most unpalatable fodder, and thrive upon the wormwood of the desert. At sight of a mare or even of a gelding, Toorcumun horses become frantic. They rise upon their hind legs, and spring upon one another with a degree of fury that can be imagined only after having been once witnessed; at other times they are perfectly gentle, and being accustomed to be ridden in compact bodies very rarely kick or bite one another. They are ridden upon a single snaffle, and are of course somewhat unmanageable at speed. Mares are never ridden by Oozbegs or Toorcumuns; it is considered unseemly to ride a mare. In camp, they are tied by the pastern to a peg of iron, driven into the earth, and are fed upon barley, or jowarr and chaff. On journeys they get about ten lbs. each of barley, or eight of jowarr, and whatever fodder (it is generally very scanty) the desert may supply. They will march sixty to eighty miles a day upon this food for many days, carrying water and grain for themselves and their master, and the clothing of

both. I have seen Yahmoot horses quite equal to our best blood hunters in figure and limb, and much handsomer, being never gelt nor cropped. In winter, the Toorcumun horse is swaddled in three thick felts of sheep's and goat's wool, which are impervious to wind and rain; and is left out in the open air day and night. At night the snow is piled around him, as a further protection. In so dry a climate, this is far better for him, than the confined air of a stable; and he preserves the sleekness of his skin throughout the winter.

The Toorcumun horse might, with advantage, be introduced into our Indian stud. His great height and strength would improve the Indian breed, and he is by no means deficient in blood. A tribe of Yahmoots dwells at Punj Deeh, on the borders of Heraut; and to that station resort all the Toorcumuns, who carry horses to exchange for slaves with the Jumsheedies and other tented tribes, dependent upon Heraut. At Punj Deeh, large numbers might be purchased.

PRICE.—The price of a first-rate Yahmoot horse is about 80 Tillas of Khiva, or 520 Co.'s Rs. or £52 sterling. The price would, of course, rise with the demand. If, therefore, it be reckoned at £100, the expense of conveying the horse to our nearest stud would perhaps amount to £30 more, making a total of £130. The best Yahmoot and Tukka horses are sold at a market about twelve miles from Khiva.

TUJKUN BREED.—There is a peculiar breed called Tujkun, which from its description, I should suppose worthy of particular attention. It is bred in Cashgar, whence it is occasionally brought to Bokhara. It is said to be small of stature, but very elegantly formed, and full of courage and fire. It has large projecting eyes, and remarkably fine limbs. I could not, whilst at Khiva, procure a specimen. I was informed by several natives, who affected to have seen it, that some years ago a horse was kept at Charrjoe in Bokhara, for which an enormous sum had been paid, having upon its head two small and slightly curved horns. It was regarded with great reverence by the Oozbegs.

KUZZAUK GALLOWAY.—The Kuzzauk horse is a robust galloway, of the powers of which it is difficult to judge, as it receives no food, but the wormwood of the steppe. It is, however, very hardy, being turned loose to graze throughout the year, without any clothing, beside its own long and

shaggy hair. In the district of Mungh Kishlaur, the herds of Kuzzauk galloways are not to be numbered. They are kept for the sake of their milk, and their flesh; mare's milk, half fermented, being a favourite beverage of all the natives of Toorkestaun; and the flesh of the horse being regarded as a delicacy. The Kuzzauk galloway is also in request throughout the cultivated tract of Khiva, as a draught horse for the two-wheeled carts, with which every house is furnished; but in the desert, wheeled carriages are unknown; and it is remarkable, that they have not yet found their way into Persia or Afghaunistaun.

**KUZZAUK CAMEL AND DROMEDARY OF KHAURISM.**—The camel of the Kuzzauk is the real, or two-humped camel. It is, however, of far more delicate make than that of Bokhara, and preferred, for the saddle, to the one-humped camel. It is the smallest of Asiatic camels: long in the back, very fine limbed, and covered with hair, upwards of a foot in length. The throat is supplied with a dense mane, about a foot and a half long, which gives it a very singular appearance. It is a gentle and docile creature, better fitted for draught than the dromedary, owing to the greater length of its back: but as a beast of burthen it is inferior in strength to the camel of Khiva and Bokhara, which is the finest I have anywhere seen.

The single-humped camel of Khiva, reared by the Toorcumuns and Oozbegs, is a very noble creature.

Its strength is greater than that of the Indian camel, and this appearance of power is increased by huge tufts of curled hair, which grow upon the muscles of the legs, and cover the neck. The intermediate breed is more powerful than either, and has generally, I believe, two humps. The camel will carry a burden of 600 lbs., at the rate of 30 miles a day, for almost any distance; provided that it be supplied with a sufficiency of the oil-cake, upon which alone it is fed; grain being considered too expensive. It walks under a burthen about two and one-third miles an hour.

Oxen are confined to the cultivated districts, and those bordering the Sea of Aral. They are few, and deserve no particular mention. They are used in the plough.

**WILD ASS.**—The wild ass wanders in herds of two or three hundred throughout the steppe, intermediate between Khiva and the Caspian. He is not the animal described in Scripture; but a much tamer creature; differing, indeed, very little in appearance from the tame variety. Those which

dwelt alone amongst the mountains are fleet and wild ; but when found in herds, the wild ass exhibits little speed, and when pressed, stops and bites or kicks at the rider's horse. The flesh is eaten by Tartars and Persians, and was the favourite food of the Persian hero, Roostum. I found the desert absolutely manured with the dung of these animals, and trampled by their hoofs. They feed upon the worm-wood.

ANTELOPE.—There is a species of antelope in these deserts almost as numerous as the wild ass. It is smaller than a sheep, which it resembles in body, neck, and head; having the delicate limbs, the hair and horns of the antelope. The horn, however, is not opaque but white, and semi-transparent like a white cow's horn; the nostrils are directly in front, and closed by a muscle acting vertically. The nose is greatly arched, and provided with a loose integument, which can be inflated at pleasure. The head is extremely ugly. This animal, which I have never seen elsewhere, is called by the natives Kaigh.

WILD SHEEP AND GOAT.—The wild sheep is said to be found in the mountains of the Bulkaun, and not to differ from that of Afghaunistaun, which I have seen and hunted. It is a noble and beautiful creature, resembling the antelope in the form of its body and limbs, and even in the texture and colour of its fur. Its tail is unlike that of the sheep, and similar to that of the deer species. It is only in the head and horns that the sheep is recognised. It carries the head very high like a goat. The male has a profuse beard of white, extending from the chin to the chest, and upwards of a foot in length. The horns are like those of the tame sheep. It frequents craggy mountains, where it pastures in flocks always furnished with sentinels, and its vigilance is such that it is approached with the utmost difficulty. It does not, however, haunt the highest and most precipitous peaks. These pasture the wild goat, an animal differing from the wild sheep, only in having a larger horn, shaped like that of the tame goat. The flesh of these animals is equal to the finest venison. The other animals of Khaurism are too well known to require particular notice.

The domesticated sheep of Khaurism deserves some brief mention. It is as high as the English variety, but has smaller limbs and carcass. The tail is of great size, being a cleft sack of the most delicate fat, extending as far as the knees, and often weighing 12 or 14 pounds. This fat resembles

marrow in texture and taste, and takes the place of oil and butter in the domestic economy of the Kuzzauk. This sheep is found in all climates of Central Asia, and might be easily introduced into England, where its fat would be very valuable.

**CULTIVATED TRACTS.**—It has already been stated that the wastes of Khaurism give place, in only two instances, to the products of human industry.

The most important of these is the tract in which Khiva, the capital, is situated; and which is a low clay plain, intersected on the east by the waters of the Oxus, and touching on the west, the skirt of a sandy desert. This plain, at present, extends only from Huzzarusp, about forty miles south of Khiva, to the Sea of Aral. But its course, in the days of Alexander, was nearly four times as long, skirting the Oxus throughout the whole of its course from Khiva to the Caspian. Its present length may be estimated at 200 British miles; its average breadth at sixty; giving an area of 12,000 square miles, which is generally profusely watered by canals from the Oxus, and richly cultivated. Even here, however, there is room for improvement, and every year brings into subjection to the plough some fresh portion of so productive a soil. The life of the Tartar shepherd has, indeed, many charms for a race who have been bred up in the midst of the desert; and its idleness seems to unfit them for the labour requisite to extort the treasures of the soil. But the change from the privations of the steppe to the luxuries of the enclosed plain; from a diet of sour curds and a robe of sheepskin, to the enjoyment of bread, rice, vegetables, the most delicious of fruit, and a raiment from the looms of India and Europe, are temptations which gradually assert their sway over even the indolence of the nomadic tribes; and as slaves form the principal wealth of these people, their own labours are long confined to the mere oversight of their establishments. Nothing, indeed, can be imagined in stronger contrast, than the nakedness of the steppe, and the riches of the cultivated lands.

**FERTILITY OF THE CULTIVATED TRACT.**—The suspension of the powers of Nature by about five months of severe frost, seems to preserve and concentrate her strength for the season, when it may be exerted in the production of fruit and vegetable. Wheat, jowarr, and rice, are yielded in the greatest abundance. The melon of Khiva is perhaps the finest in the world, and the grape scarcely yields even to that of Cundahar and Heraut. Other fruits are the apple, pear, peach, apricot,

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and plum ; and the limitation is rather owing to the state of horticulture at Khiva than to any incapacity of the soil or climate.

The plain of Khiva is intersected by numerous canals, and divided into estates and gardens by low, neatly constructed, walls of clay. It is well wooded, and as the houses of the gentry are all constructed somewhat in imitation of castles, the effect is picturesque. During the summer and spring the canals afford wholesome water ; but in the winter, these are dammed up, and the town is ill supplied from wells and ponds.

**KHIVA, THE CAPITAL.**—Khiva, the present capital of Khaurism, is a town about half a mile square, defended by a high mound surmounted by a wall and bastions of clay, above which a large column is visible. It contains no monument of interest, being filled with miserable mud-houses, and intersected by narrow lanes. The castle of masonry contains the state apartments of the king. But when I have mentioned that glass and chimneys are things unknown at Khiva, some idea may be formed of a regal palace there ; but certainly none that will do full justice to the meanness and wretchedness of the dwelling. It is for this reason that the Khaun Huzurut still prefers sitting in his black tent ; an example followed by many of the Oozbegs and Toorcumuns.

**SUBURBS.**—Small as is this capital city of Khaurism, the suburbs are extensive, and the villages and the gentlemen's estates form a closely connected series over the whole of the culturable land.

**OORGUNJ.**—Oorgunj, formerly the capital, is still the town next in consequence to Khiva, which it exceeds in size and in traffic ; being situated upon the western bank of the Oxus, and visited by the Bokhara caravans, in their passage to Khiva and Mungh Kishlauk, and by those from Kokaun bound for Khiva.

**HUZZARUSP.**—Huzzarusp is next to this in importance, being the residence of the Inauk, or king's brother, the second person in dignity of this kingdom. It is also situated upon the Oxus, but near the southern limit of the cultivated land.

**GHONGHRAUT.**—Ghonghraut is perhaps the next in consequence after Huzzarusp. It is situated near the embouchure of the Oxus, and inhabited by a race of Oozbegs termed Kara Kulpauk. Of this town, I could learn only particulars relative to the unchastity of the females, who still retain the

following remarkable custom :—When a traveller enters the city, unmarried girls meet and challenge him to wrestle. The vanquished is obliged to submit to the pleasure of the conqueror. The gross licence of the Kara Kulpauk women is proverbial, and commences in early childhood.

These are the principal towns of this highly cultivated plain. The province of Merv may be described in few words.

PROVINCE OF MERV OR MOWR.—It is a plain about sixty miles in length by forty in breadth, of the finest sand, presenting an aspect more dreary than that of the desert itself; for not a leaf is seen throughout its extent, and the soil is too unstable to produce even a weed or a blade of grass. Nevertheless, the considerable body of water poured down by the Moorghaub, and entirely consumed in irrigation, gives fertility to the fields; and the poorer kinds of grain, as jowarr and barley, are produced in great abundance. The melon also is particularly fine, and ere the ancient city was deserted, grapes and other fruits were not unknown. But the troubles of the last sixty years caused neglect of the dam of the Moorghaub, upon which depended the very existence of this desert oasis; and Merv was for some time utterly abandoned; nor have the fostering measures pursued by the present governor restored one inhabitant to the city, although the plain is cultivated by Toorcumuns dwelling in tents.

MERV.—Merv, however, is too important a site to be long neglected, being the granary of a large portion of the hill country of Heraut, and the channel of commerce between that city and Khiva, and between Bokhara, Heraut, and Meshed.

The government of Merv is one of the most considerable offices of the State. Its seat is a small mud castle upon the western bank of the Moorghaub, at the point of the dispersion of the waters of that river, through the five principal canals. A few miserable huts form a bazaar, resorted to from very distant parts, and the most considerable mart in a circuit of several hundred miles. There are said to be about 60,000 families dwelling upon this plain, and the revenue in taxes and customs is reckoned at 30,000 Tillas, or about 200,000 Co.'s Rupees.

YOOLLATAUN.—Yoollataun is a continuation of the plain of Merv, southward. It enjoys the waters of the Moorghaub, is tilled by nomadic Toorcumuns, and yields a revenue of about 1,000 Tillas, or 7,000 Co.'s Rupees.

PUNJ DEEH.—Punj Deeh, a valley on the Moorghaub, once highly cultivated, is now almost abandoned. Its revenue about six years ago was 500 Tillas, or about 3,500 Co.'s Rupees.

EXISTING MONUMENTS.—The existing monuments of the former empire of Toorkestaun are few, poor, and neglected. Even the tomb of the hero, Ulp Urslaun, in Merv, is almost forgotten, although a rallying point for memory, and an oft-quoted example of the instability of human grandeur, amongst the Persians, whom he subdued.\*

I found a lofty brick column of inelegant construction at Old Oorgunj. It is said to have been built by Chenghiz Khaun. Amongst the ruins of that ancient capital, I found interest in tracing the pyramidal roofs of the palaces of the Mogul dynasty at Maandoo, the former capital of Malwa; which I had again met with on the tombs of some of the family of Timoorlung at Bukka, and afterwards on the tower of the Kremlin, and Kityegorod, at Moscow; thus forming a connected chain extending upwards of 3,500 miles, and yet not comprising the full extent, north and south, of the conquests of that shepherd race, whose architecture savours of their Chinese origin.

I could hear of no other monuments worthy of mention.

CUSTOMS AND MANNERS.—Of the customs and manners of this nation it is not easy for me to speak satisfactorily; for during my residence at Khiva, although treated with much outward ceremony, I was, as has been seen, a close prisoner. Something, however, I saw, and something more was learned by inquiry.

THE OOZBEG.—OOZBEG COSTUME.—The Oozbeg, the present lord of the kingdom, averages about five feet seven inches in height, and is stout and heavy of make. His countenance is broad and ruddy. His eyes are long and not well opened. His complexion is almost as fair as that of Europe. He has little or no beard. The women are described by Asiatics as very beautiful. But I suspect this beauty consists of a complexion unusually fair and a rosy and delicate brow. The female figure must, I suppose, be always heavy, or at least rendered so by the costume of the country. The male attire is a shirt of cotton, loose drawers of woollen cloth, and a succession of from two to six cloaks, generally of striped silk,

\* Upon the tomb of this hero and conqueror were inscribed the following words: "All ye who have seen the glory of Ulp Urslaun exalted to the heavens, come to Merv, and you will behold it buried in the dust."



or cotton chintz, wadded with raw cotton; but amongst the nobility, of broad cloth (of which dark green is preferred), lined with fur and edged with the same. The head-dress of all males, excepting the priests, who wear turbans, is a cylindric cap of black lambskin, large in proportion to the rank of the wearer.

The female attire differs from that of the male only in the head-dress, which is a white or coloured kerchief rolled up like a robe, and wound around the head in a high cylindric form. The end of this is often opened, and brought around the throat, which their notions of decency oblige them to conceal.

**TARTAR COSTUME.**—The Toorcumun cap is slightly conoidal. Sometimes it is a close skull-cap of black lambskin. In other respects he adopts the Oozbeg attire.

**THE TOORCUMUN.**—His height averages about five feet and eight inches; but he is less heavily framed than the Oozbeg, and with a countenance sometimes dark and sometimes florid, has almost always irregular features, and small, round, lively black eyes. The woman, being less exposed, is fairer than her lord, whose counterpart in form and feature she is. I have seen many pretty Toorcumun women, but a beauty must be a rarity. The style of countenance is decidedly European.

**THE KUZZAUK.**—The Kuzzauk is more robust than the Toorcumun, and of more clumsy build. His complexion is fairer, his cheek-bones are higher, his features are more irregular. His eyes are small, and ill-opened, and generally placed at a slight angle.

He is almost ignorant of the use of linen, and can seldom command the luxury of civilized attire. Instead of the woven cloak, therefore, he draws around him a mantle of half-tanned sheep's or young camel skin, dressed with the wool inside, or a similar cloak of the spoils of the horse, with the hair outside; and his head is covered with a bonnet of the same material. The Kuzzauk woman is fairer and redder than her lord. She always appears as if her ears had just been boxed; and excepting perhaps the negress, is the ugliest female under the sun. She is robust, and does all the laborious duties of the shepherd's life.

**THE KULMAUK.**—The Kulmauks are too few to require distinct notice, and the Sarts differ in no respect, excepting attire, from other inhabitants of Persia. The Oozbeg is first in consequence. After him the Toorcumun, and last of all, the persecuted Kuzzauk.

WEALTH OF THE OOZBEG. — The wealth of the Oozbeg consists in land and in slaves. He has often several hundreds of these unhappy drudges, whom he can afford to purchase from the Toorcumun, being proprietor of the richest tracts of the soil. He is a hard master, and, as a man, one of the most degraded of God's creatures; living a life of sullen and joyless apathy, chequered only by debauches of the grossest character, and indulgences too brutal to be named. When sufficiently wealthy to commit his domestic affairs to the hand of a steward, he sits in his house from day to day, without occupation, slumbering life away. His wife has the keeping of his purse, and, being utterly neglected by her brutal lord, amuses herself at his expense, and frequently without even the decency of concealment. As every house has one or two small carts drawn by the Kuzzauk galloway, she mounts such as often as she feels inclined, and takes a jaunt into the wilderness, with the male slave whom she favours. This species of debauchery is the only hope held out to the unhappy slave of obtaining his liberty—for if he can establish himself in her good graces, he is enriched by her liberality, and, after fifteen or sixteen years, is able to purchase his discharge.

FIELD SPORTS.—The only decent amusement of the Oozbeg is hawking, for which the country is well adapted, being open, and upon the banks of rivers full of hares, pheasants, and the red-legged partridge. He is well mounted, and has never occasion for a good seat, in a country so level, and upon a horse untrained to leap.

HORSE TRAPPINGS.—He rides upon a smooth snaffle, and of course cannot control his steed, which is generally a Toorcumun of the Tukka or Yahmoot breed, the two finest in the land. His wealth or dignity are guessed by the trappings of his horse, which are always beautiful, and often costly, having scales of pure silver inlaid with gold, covering the harness, and hanging in thongs from the neck. The stirrups, which are large, are also richly inlaid with gold. Turquoise and cornelians, and even rubies, are often set in the harness; but the latter are always uncut, and seldom of great price. It is remarkable, that horse harness is never stolen by servants.

ARMS.—The arms of the Oozbeg are the sabre, the matchlock, and the dagger. The pistol is too rare to be commonly used, and the country affords no wood fit for spear-shafts, although this weapon is much in request, and occasionally obtained from the Kuzzauk, who in turn receives it from

his Russian brethren. The sabre, used by men of rank, is the Isfahaunee or Khorussaunie blade; and the rifled matchlock is manufactured in Heraut or in Persia. There is a fabric of sabres and daggers at Khiva, but they are of very inferior quality, and no present is so acceptable to the nobility of Khiva as foreign sabres, pistols, and rifles, provided that the blades are of delicate water, and the fire-arms not upon the detonating principle.

VALUE OF THE OOZBEG AS A SOLDIER.—From the habits of the Oozbeg, above described, it may be concluded that he is a despicable horse soldier; and I need only add, that foot soldiers are unknown in the land. He is, indeed, a very different creature from his robust and hardy ancestor, who, under Chenghis Khaun, rode down the armies of the East, and subdued a quarter of the globe. Whilst other nations have been tempering their strength by civilization, and increasing their wealth and power by commerce, he has been every year losing sight of the simple but hardy manners of his fathers, and receding upon the scale of virtue, in proportion to his neighbours' advance. Surrounded by deserts infested by those of whom he purchases human flesh—a race of men more formidable by their rapacity and inhumanity than the wild beasts of the forests,—the wilds which have hitherto secured his independence, have debarred the passage of a ray of knowledge from the civilized world. Thus, the improvements which science has introduced into modern warfare are regarded as the effect of necromancy, and the innovators are held in superstitious terror.

TOORCUMUN HABITS—SLAVE TRAFFIC.—The life of the Toorcumun is more active than that of the Oozbeg, for he generally lives in a camp in the wilderness, where luxuries are unknown, and there are more inducements to enterprize. Every third day, his tent is struck by the women, by them packed upon his camels, and carried to a fresh spot, where the pasture has not been browsed. The desert abounds in a small animal called Kaigh, holding an immediate link between the sheep and the antelope; and, as he is generally decently mounted and provided with deer-hounds, he is much addicted to the chase. At other times he besets the track pursued by caravans, plunders the goods, and enslaves the merchants, whom he sells at the Merv or Khiva market. When such merchant happens to be a Soonnite, or orthodox Muhummudan, as is generally the case, he beats or tortures him until he declares himself, in the presence of witnesses, a Sheeah, or Persian heretic; for the Muhummudan law very

strictly forbids the enthrallment of a Moosulman, and amongst Muhummudans, as among Christians, it is more damnable to differ in opinion with a brother than to be ignorant of the rule by which he regulates his conduct, and justifies or condemns the world. The number of slaves thus captured almost exceeds belief. At Khiva, there are not less than 12,000 of the subjects of Heraut, and probably 30,000 Persians. The total number of slaves at Khiva is estimated at 700,000. The Toorcumun is even more cruel to his slaves than the Oozbeg. He scruples not to sell the women, whom he has reason to suppose with child by himself, and he has no pity upon either male or female of those whom he retains as beasts of burthen. As he is not addicted to the brutal vice of the Oozbeg, there is no hope of liberty, short of death, to the slave in his service. A considerable number of the Toorcumuns have been induced to cultivate the soil. At Merv, about 60,000 are thus employed, and in the plain of Khiva there are probably as many. These, however, generally retain something of their old unsettled habits, dwelling in tents, and frequently possessing flocks and herds, which they send for pasture into the wilderness, following them thither, at seasons when agriculture is at rest.

**HABITS OF THE KUZZAUK.**—The Kuzzauk is the rudest of the people of Khaurism. He is free from the degrading habits and indulgences of the Oozbeg, and is less tempted to the predatory pursuits of the Toorcumun. He is indeed nearly in a state of nature, a condition preferable to anything short of complete civilization. He moves, like the Toorcumun, from pasture to pasture, leaving, like him, all the onerous duties of existence to the female. His children tend his camels, horses, and sheep; and he himself chases the fox, the antelope, and wild ass of the desert, or wanders from tent to tent, whiling away the time in conversation. As he inhabits a country exposed to great extremes of heat and cold, being for four months in the year covered with snow, and during an equal period burnt up with the rays of a blazing sun; he is obliged to suit his residence to the season, and is driven to expedients unknown to his brethren the Toorcumuns. In the summer he migrates to the valleys of the higher lands, where are wells scattered at long intervals, and known to all the wandering tribes. As the winter approaches he descends to more sheltered spots, still guided by the position of wells; for neither river nor stream is known in the land. When the winter has set in, he is no longer fettered by such local con-

siderations, for the snow furnishes him with an abundant supply of water; but, as the snow completely hides the pasture, it is necessary to migrate to the lowest lands, unless the fodder be such as will admit of stacking for the winter. Hitherto, he has lived almost solely upon the milk of his camels, mares, and sheep, which he eats in the form of curds, without bread or vegetable, knowing only at long intervals the luxury of flesh. But, as the winter pasture can furnish but a scanty supply of milk, he kills, at the commencement of winter, all his old camels, horses, and sheep, and salts them as a winter store. These are eaten without any accompaniment of bread or vegetable, and he knows but a single method of dressing the flesh, viz. that of boiling.

In the spring of the year he pastures his flocks and herds in the neighbourhood of the chalk cliffs which appear to stretch south from Nuov Alexandrof to the latitude of Khiva, and which preserve for several months beneath their brows a treasury of snow.

**KUZZAUK MANNERS.**—His manners are rude and unpolished, but he is hospitable and kind-hearted, honest, and untainted by the vices of his neighbours.

The few slaves possessed by the Kuzzauk are more gently and generously treated than those who serve the Oozbeg and Toorcumun. He is more wealthy than the latter; but being remote from the seat of government, is subject to the depredations of the Toorcumuns, who dwell between him and Khiva. His wealth, I need scarcely say, consists wholly of flocks and herds, and nearly all articles of furniture and comfort, several of which (as carpets, felts, tents, and horse-trappings), the Toorcumun himself manufactures, he purchases, or rather receives in exchange, for camels, galloways, and sheep. All domestic utensils, however, as cast-iron cauldrons, pots and pans, knives, wooden bowls, platters, and spoons, are received from Russia; which supplies also with such articles the whole of Toorkestaun or Tartary.

**THE KUZZAUK AS A SOLDIER.**—The Kuzzauk has few weapons at command. His country yields them not, and his habits of life scarcely render them necessary. He is obliged to furnish his quota of armed horsemen for the service of the State, and these are mounted upon the sturdy galloway peculiar to this people, and wretchedly armed with a few long spears, sabres, and even matchlocks. His horse being fed solely upon the wretched pasture of the country, and always gelt, is incapable of the fatigue which the Toorcumun horse will endure, but is less incommoded by exposure

to the inclemency of the weather. The Kuzzauk is more superstitiously fearful of fire-arms than even the Toorcumun. He professes the Muhummudan religion, and to be a Soinnie; but although there be Kuzzauk Moollas, so styled, he is profoundly ignorant of the faith he professes, and very rarely goes through the ceremony of worship.

LEARNING OF KHIVA.—The learning of Khiva is scarcely worthy of the name, and confined solely to the priesthood, who learn to read a little Arabic and Toorkish, which is written in the Arabic character. So utter is the want of curiosity respecting passing events, that the existence of the English was unknown previous to the late siege of Heraut; although there is constant communication between Khiva and Persia.

ARTS AND MANUFACTURES.—There are few arts and manufactures known in Khaurism. Of these the most important is undoubtedly the fabric of felts and carpets by the Toorcumun, supplying the whole kingdom with these essentials of Eastern comfort, and contributing a small quota to the trade with Russia. The felts (nummud) are perhaps inferior to those of Ghayn, and the carpets cannot be compared with the fabric of Heraut or of Persia. The cutlery of Khiva is of extremely inferior quality, and consists of a small number of swords and daggers. The sheaths of these are of silver or gold, according to the military rank of the wearer, and are rather prettily embossed by the Khiva silversmith. These are the only manufactures of Khiva.

COMMERCE OF KHIVA.—The commerce of Khiva is inconsiderable, and yet of extreme importance to a kingdom so unprovided with manufactures of its own, into which a taste for the conveniences of life is creeping. At the commencement of the reign of the late king, usually called Madreheem Khaun, the state was at peace with Russia, and the Khiva caravans traded direct with Orenburgh: but since the friendly relations between Russia and Khiva have been interrupted, the traffic is transacted entirely through the means of Bokhara, to the great advantage of the latter state and detriment to Khiva. The articles of merchandize brought from Orenburgh and Astrakhan by the Bokhara caravans are broad-cloth, chintz, cotton cloths, furs, leather, fine loaf-sugar, cast-iron cooking utensils, bars of wrought iron, China-ware, etc., in return for which Khiva has almost nothing to offer but hard cash and coin, Bokhara supplying the dried fruits required in Russia.

With Bokhara Khiva has little interchange of native

commodities, although the latter state receives nearly all her foreign supplies from the Bokhara caravans. The lamb-skins of Bokhara are indeed finer than the native produce of Khiva, and Khiva sometimes serves as a granary to Bokhara.

From Heraut Khiva receives tobacco, a few silks and shawls, a little tea, and a few rifled matchlocks, and Persian sabres and daggers; and returns coin, lamb-skins, Toorcumun horses, dromedaries, and camels.

From Persia are brought arms, silks, loaf-sugar, turquoises, a few Persian shawls, and tobacco. And the return is in grain, lamb-skins, and Toorcumun horses.

Notwithstanding the hostile feelings that for some years past have prevented open traffic between Russia and Khiva, a good deal of secret intercourse has been maintained between the Russian merchants and the Kuzzauks and Toorcumuns in the province of Mungk Kishlauk: these wild tribes being dependent upon Russia for articles which they regard as luxuries, but which we deem necessaries, viz. bread, sugar, cooking utensils, knives, wooden bowls, platters, and spoons, for which they barter their flocks and herds.

REVENUE OF KHAURISM.—The revenue of Khaurism is of three kinds—a house-tax, a property-tax, and a tax upon merchandize. The Oozbegs pay according to their wealth, from half a tilla to three tillas per annum; *i.e.* from six to thirty-six shillings for each house.

The Toorcumuns and Kuzzauks pay one in forty of all live stock.

The duties are levied upon imported slaves, and slaves purchasing freedom. On imported and exported wheat, tobacco, etc., at so much the camel-load; and upon other exported and imported merchandize according to its value.

I was under such strong suspicion during my brief residence at Khiva, that I deemed it imprudent to make inquiries relative to the wealth of a country which Christians were supposed to covet, and which was at the moment invaded by a Christian nation; the following estimate cannot, therefore, be depended upon.

## REVENUE.

	Tillas of Khiva.	Co.'s Rs.
From Punj Deeh, per annum - - -	500	3,000
Yoollataun - - -	1,000	6,000
Merv, including customs - - -	30,000	180,000

## At the plain of Khiva,

	Tillas of Khiva.		Co.'s Rupees.
30,000 settled families at 3 tillas	-	90	90,000
30,000 " " 2 "	-	60	60,000
30,000 " " 1 "	-	30	30,000
10,000 " " $\frac{1}{2}$ "	-	5	5,000
			<hr/>
			185,000 = 1,110,000
Toorenmun families, at the rate of 1 in			
40 of all live stock, 100,000 families	100,000		600,000
Kuzzauks, ditto, ditto, 100,000 "	120,000		720,000
Customs at Khiva and other places	- 40,000		240,000
			<hr/>
			2,859,000

or about £285,000, or about seven times the revenue of the kingdom of Heraut.

It is, however, to be remembered, that nearly the whole of this sum is the personal property of the Sovereign, as from it are paid none of the offices of the State; and that the police and standing militia, if such they may be termed, are furnished free of expense to Government by the settled inhabitants as well as by the nomades.

The settled inhabitants of Khaurism are bound to furnish, for the use of Government, to be ready at a moment's notice, one armed horseman of their own tribe, from every fifty chains of arable land. The nomades, or tented inhabitants, furnish similar horsemen, at the rate of one horseman for every four families. These horsemen are not paid by Government, unless levied for some military expedition, when each receives 5 Tillas or 30 Co.'s Rupees, about £3, whatever the distance or duration of the enterprise. It may be supposed that a militia, thus constituted, must be deficient in all that can give efficiency and vigour to a military mass. That the horse, arms, and equipment of the soldier will ever be of the most inferior description; and that the soldier himself will have little skill in the use of his weapons and management of his horse, and be utterly unaccustomed to the discipline requisite to ensure order, and distinguish a body of horsemen from a flock of sheep.

It is equally certain, that the royal treasury, unaccustomed in times of peace to the burthen of a military tax, opens with reluctance whenever war threatens the land, and often too late to be of service to the State.



MILITARY FORCE OF KHOURISM.—The following is a rude estimate of the military force of Khaurism:—

Oozbegs	-	-	-	50,000	horsemen.
Toorcumuns	-	-	-	25,000	„
Koozulbaush, or Persian	-	-	-	8,000	„
Kuzzauks	-	-	-	25,000	„
				108,000	

The above is far less than the general estimate, which is 350,000; but I am inclined to think that the latter amount is an error, arising from mistaking the number of families in Khaurism for the number of horsemen maintained by those families; and I am credibly informed that the largest muster has never exceeded 85,000.

Of these horsemen, the Oozbegs are accounted the best, and the Persians are really the *élite*. The Toorcumuns are next to the Oozbegs; and the Kuzzauks, accustomed to the tyranny of the Toorcumuns, mounted upon galloway geldings, ill-clad and half-armed, may indeed be useful as forayers and couriers, but deserve not to be reckoned in the ranks of battle. Even the Oozbeg and Toorcumun horse, when they appear in the field, greatly disappoint the expectation which has dwelt upon the fame of Tartary for steeds. Some fine, and many large horses are to be seen in the ranks; but nearly two-thirds are under-sized, and many are mere galloways or animals remarkable for their ugliness and unserviceableness.

DESIGNS OF RUSSIA UPON KHIVA.—So early as the reign of the Czar Peter, the extreme importance of Khiva to Russia was understood; and an expedition, under the command of Prince Bekevitch, was dispatched from Gorief, for the conquest of Khaurism. This force of 4,000 coasted the Caspian to the most eastern point of the Gulf of Mertvoi, and thence marched upon Khiva, easily overcoming all opposition. When near the capital, the Khaun Huzurut, who was then, I believe, a Kuzzauk, sent a polite embassy to the Russian General, assuring him of his friendship and submission, and inviting him to the royal palace with a small retinue. The infatuated General complied. And when in the power of the Khaun, was forced to write to his lieutenant, directing him to quarter the troops in the neighbouring villages.

Upon a repetition of this order, the local commander was obliged to comply. The troops were dispersed through the villages, and murdered during the night. Only two Cossacs

escaped, and bore the news to Russia. About this time was erected the fort of Krasnoyed'sk, at the mouth of the Gulf of Balkaun. It has long since been abandoned.

After this event, it would appear that some slight traffic was maintained between the two States, regulated by their mutual convenience. Russia, indeed, affirms that the Khaun Huzurut of Khiva entirely submitted to Russia, and that the Sovereigns of that State held their dominions through her sufferance. This is clearly a mere boast; for it is not in the hour of complete triumph over a foe, that a barbarous State would be tamed by that foe to submission. Some kind of intercourse of Khiva with Orenburgh and Astrakhan, was however maintained, until the reign of the late king of Khaurism, Muhammad Ruheem Khaun, or Madreheem Khaun as he is usually called. He was a vigorous and war-like prince, and took from Bokhara several tracts of territory. It was toward the close of his reign, and during a period of hostility between Khiva and Bokhara, that a Russian detachment attempting to force its way to Bokhara through the territories of Khaurism, was opposed by the troops of Khiva; an event which led to the late hostilities between the Russian and Khivan States.—See Vol. i., p. 114.

COURT OF KHIVA.—The Court of Khiva is very simply constructed. The monarch himself transacts all important business, and gives special orders upon every important affair. His Prime Minister, the Mehtur, has little more than those subordinate details under his control, which at European courts fall to the lot of Under Secretaries. The Khoosh Beegie, or Chief Falconer, who is the second officer of State, discharges alternately high military functions and the meanest of a civil character. The officers subordinate to these, have no voice in the councils, nor any authority in the affairs of the State. Even the priesthood, which in Muhammadan empires has usually so much influence, though here treated with marked respect, is not much consulted by the monarch.

CHARACTER OF THE REIGNING KHAUN.—Ulla Koolie Khaun, King of Khaurism, or Khaun Huzurut (*i.e.* Supreme Lord) of Khiva, is son of his predecessor, Muhammad Ruheem Khaun, and the third of the present, or Oozbeg dynasty; previous to which, the throne of Khaurism was held by Kuzzauk Khauns, with an Oozbeg aristocracy. The present monarch is a man of about forty-five, of ordinary stature, and extremely amiable countenance. He has more beard than the generality of Oozbegs, an advantage owing to intermarriage with the Sarts, or original Persian inhabitants

of Khiva. I say advantage, because the beard amongst Muhumudan nations is an object of much consequence, and a fine beard is esteemed an especial mark of the favour of Heaven. Ulla Koolie Khaun claims descent, somewhat dubiously, from the great Chenghis Khaun, whose undoubted descendant is on the throne of Kokaun. He is certainly amiable, and is accounted just. His judgment also appears to be sound. But he is of a timid disposition, and deficient of the vigour and energy of mind requisite in one, performing in his own person all important functions of the State.

He has the Oozbeg passion for field sports, and spends several months of each winter in hawking and coursing. He is free from the vices of his nation, if we except smoking, which in those countries is accounted rather an illegal indulgence.

As the Muhumudan law allows only four wives to a faithful believer, the Khaun Huzurut has no more than four at Court at any given time; but, being an admirer of beauty, these are occasionally exchanged; so that the actual number of those who are, or have been, his wives is twelve. Several of these have families. They are Oozbegs, selected chiefly from amongst the branches of the reigning family. They are close immured in the haram, and have no share in the councils of the State, nor much influence over the actions of their master. The title of the king's wives is Bebee.

THE INAUK OF HUZARUSP.—The second man in the kingdom is undoubtedly the Inauk of Huzarusp, a town about forty miles south by east of Khiva. His name is Ruhmaun Koolie, and he is only brother to the Khaun Huzurut. He is in person tall and powerful, and his mind appears to be vigorous and acute. In early life, he was much addicted to wine and other sensual enjoyments, and has still all the Oozbeg taste for hawking. But his character has lately reformed. He is much consulted by his brother, who appears sincerely attached to him.

The throne of Khaurism can scarcely be said to be hereditary. It is not considered so by the Toorcumuns. The last king, Madreheem Khaun, who was second of the Oozbeg dynasty, was brother to his predecessor, whose son lives at Court in great honour, although an object of some jealousy to the present monarch. He is styled the Bee. He does not appear to be a man of any talent or energy, and has not much voice in the affairs of government.

THE HEIR-APPARENT.—The third person in the kingdom is the Toorruh, or eldest son, and heir-apparent of the monarch.

He is considered a young man of good sense and amiable disposition. During the annual absence of the Khaun Huzurut upon hunting expeditions, the reins of government are entrusted to the hands of this prince; but at other seasons he takes no part in affairs of State, but spends his time in hawking, and in other amusements.

**THE LATE AND PRESENT MEHTURS, OR PREMIERS.**—The late Mehtur, or Premier, Yoosuph Bae, was a man of great talent and humanity. He had preserved his office under five successive monarchs, and was universally respected. He was absent from the capital during the massacre of the travellers and their servants, or would certainly have prevented the deed, against which he warmly protested on his return. From respect to his memory, his eldest son was made his successor in his office of Mehtur. His name is Yakoob Bae. He is a man of no talent, dignity, or importance, and only the extreme indulgence of the present monarch could preserve him in his office. One of the greatest difficulties I had to encounter at the Court of Khiva was found in the incapacity and irresolution of this Minister, with whom I had many conferences.

**KHOOSH OR GHOOSH BEEGIE.**—The Khoosh Beegie, or Chief Falconer, is the son of the late officer of that title, a man who appears to have been much esteemed. The Khoosh Beegie had command of the force sent against the Russian expedition, and exhibited on that occasion neither courage nor military skill. As I was prohibited from all intercourse with him and other nobles of the Court, I cannot offer any particular description of their characters. It may suffice to observe, that with the Khoosh Beegie terminates all the real power and consequence of the Ministry: the remaining nobles serving only to swell the retinue of the monarch, but possessing no authority at Court.

**PRIESTHOOD.**—The heads of the priesthood are the Nuqeeb and Sheikh ool Islaum. From this body are chosen the Cawzees, or magistrates, who decide all trifling controversies, and many criminal causes. Those of greater weight and importance are referred to the Khaun Huzurut himself; and every sentence of death requires his confirmation, given after a personal investigation. Where so much is to be performed by an individual, from whom there is no appeal, many instances of injustice and undue severity may be expected; but one of the safeguards of equity is found in the absolute power of the monarch, frequently exercised, to punish with death or mutilation, a false oath.

The Toorcumuns and Kuzzauks, dwelling in the wilderness, have their own separate jurisdictions; all sentences of death requiring the royal confirmation. Each tribe of Toorcumuns has its chief, under whom are Yooz Baushees, or chiefs of 100 families. Under these again are the Reesh Sofeyd, or white beards, selected by the community for the decision of petty causes.

Such are the meagre particulars which my very limited opportunities enabled me to collect. Even these were not noted upon paper, excepting the numbers of the tribes; for as I was about to visit other countries on quitting Khiva, I did not think it prudent to carry memoranda, which might be prejudicial to that State in the hands of enemies. Were leisure allowed me for comparing together the relations of other travellers, I might make this Appendix fuller, and more complete; but I have no prospect of ever enjoying such an advantage, and must therefore cast myself upon the indulgence of the public.

## APPENDIX C.

## OBSERVATIONS ON THE CASPIAN AND ARAL SEAS.

IN a work upon Khiva, compiled by Zimmerman, and translated by Morier,\* many traditions and authorities are brought together, tending at first sight to prove the eastern coast of the Caspian, to have been removed westward of its former position. Upon comparing these, however, nothing amounting to strong probability results. Abulfeda speaks of a hill, from the summit of which, on a clear day, the Caspian and Aral were visible. But is it surprising that any considerable summit should command a view east and west of forty miles? Again, Jenkinson travels from the Caspian to Oorgunj, starting on the 14th of an unknown month, and reaching a gulf of the Caspian, and starting from it on the 5th of October, and reaching Oorgunj on the 16th, making thus twelve days march between this gulf and Oorgunj.

Now this gulf is undoubtedly the Karasoo inlet, on which stands Nuovo Alexandrofski (or Dahsh Gullah), this being in the direct line of march, formerly followed by caravans from Mungh Kishlaur to Oorgunj, but shunned since the Russians built a fort there. And if by Oorgunj, Old Oorgunj is meant, Jenkinson made the distance in exactly the time at this day consumed in the journey. If New Oorgunj, he travelled it in about two days less than the ordinary period. This, therefore, is no proof of any change in the coast of the Caspian.

The Abulkhaun mountains of Abulghazi, are undoubtedly the Bulkhaun mountains of the present day.

That very great changes have taken place in the level of

\* Published by J. Madden, 8, Leadenhall-street.

the Caspian, the whole western portion of Khaurism attests ; but it is not so easy to discover the origin of the change, or changes ; for, after the passage of four or five centuries, objects and features assume an appearance of antiquity, not easily distinguishable from those a thousand years anterior in origin.

Between Khiva and Mungh Kishlaur, I found high table which I have reason to think again occurs between the seas, as far as the sixty-fourth degree North latitude. This land seemed to me not less than 1,500 feet higher than the level of the Caspian. I had, indeed, neither thermometer nor barometer ; but I judged by the breadth and steepness of acclivities, and by finding the snow spread over those heights a month after its entire disappearance from the nearly parallel latitude of Oorgunj. This is the more remarkable, because in those countries, when the winter breaks up, the transition is very sudden, owing to the vast accumulation of solar heat upon the extensive desert tracts. Now, this high table-land is formed of chalk and marl covered with a thin stratum of limestone, composed of the shells of the Caspian. It has, therefore, at some distant period, been part of the basin of this sea, when, as now, an inland sea ; and as, in order to its submersion, as at present it exists, the whole of Tartary must have been likewise submerged, it is less difficult to attribute its present elevation to some convulsion of Nature, at a period extremely remote, probably anterior to the existence of the human race. With this, therefore, we have nothing to say.

But the lower land, for some distance from the eastern shore of the Caspian, is broken into cliffs and basins, that gives the idea of comparatively recent occupation by that sea. Nay, these phenomena are observable as far as within about fifty miles north-west of Khiva, although, in the latter case, the abandonment seems more remote, and the traces are less indubitable. This may have been occasioned by a sudden escape of the waters of the Caspian, or by their gradual desiccation. In the former case, the hypothesis by which this sea is connected in remote periods with the Euxine, seems highly probable ; but nothing less than the discovery, on the coast of the Euxine, of shell limestone precisely similar to that of Khaurism, could establish the existence together of these seas in one isolated basin.

If the volume of the Caspian has been abated by a gradual desiccation, several causes may have concurred to this effect. In the first place, it is an established fact, that the Caspian

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has been deprived, during several hundred years, of the body of water poured into it formerly by the Oxus, and, less certainly, by the Jaxartes. This body of water (I speak only of that of the Oxus) amounted to 1,625,470,560,000 cubic feet annually, or, in 1000 years, to 1,625,470,560,000,000 cubic feet, which, spread over the surface of the Caspian, reckoned at 4,782,000,000,000 square feet, would add 340 feet to its present level. As, however, such a body of fluid would have increased greatly the surface of the Caspian, a considerable portion of this must have been lost in evaporation, we will suppose one-third; and still the Caspian is left 200 feet lower than at this moment it would have been, had the course of the Oxus remained unchanged. If, therefore, the Caspian, 1000 years ago, was not increasing yearly in volume, it is now 200 feet lower than it then was. Such a supposition will account for all observed phenomena; and it will be remembered, that I have not made allowance for the waters of the Jaxartes, which probably once terminated in the Caspian.

The supposition, adopted by Zimmerman, that the Caspian has mined itself a basin further west, is utterly untenable. The lower waters of the Caspian are never in motion. It is a mere lake, guiltless of tides, those effecters of change in the coasts of our globe, and no one, who has ever seen the cliffs of the eastern shore of the Caspian, could imagine their having served any purpose but their present. A lake cannot delve for itself a new channel. What is it to do with the *débris* of the cliffs it has thrown down? They must remain where they fall, or at best, can only be deposited in the profoundest depths of the old basin, gradually to fill it up, and cause an overflow of waters, but not a gradual shifting of the basin itself.

Now if we suppose the shrinking of the Caspian to be occasioned by the failure of a tributary river, this shrinking must continue, until the surface of the sea be only sufficient for the evaporation of the waters poured into it; and it seems not improbable that this balance is still incomplete, and that the level of the Caspian sinks yearly.

As the changes produced upon the face of these countries has been generally referred to one of two causes, namely, the sudden outbreak of the Euxine, through the Dardanelles, or the gradual desiccation of the waters which once covered a great part of the steppe of the Oorahl and a portion of that of Khaurism, it may not be amiss to offer a few words upon the latter supposition.



Until we have correct levels of the lands adjacent to the Caspian and Euxine, it is impossible to build a satisfactory theory upon the disappearance of waters, which have left so many testimonies of their former presence. But to imagine a gradual desiccation, within the limits of our chronology, is to assume a distinct period for changes, which have generally baffled research, receding in proportion as they were followed by inquiry, until lost in the haze of eternity. For, if a gradual desiccation has drained the submerged lands, some violent catastrophe, not in the usual order of nature, must have deposited those waters there, within a calculable period; and if that convulsion be the same by which other seas and continents have received their several forms and locations, then are such extensive operations brought within the range of historical antiquity. It is, further, to suppose an effect not elsewhere observed upon the same scale; and, therefore, belonging to the class Prodigy. It is also to nullify a fact presented to our bodily eyes, namely, the present connection of the Euxine with the ocean; a connection which could not have existed when the lands in question were covered by the waters of the Caspian; since those waters must have held a level higher than the present level of the ocean, to inundate lands which the ocean cannot reach. If we suppose this large tract of steppe to have been submerged beneath the Caspian, we must believe that the Caspian and Euxine were united; and when the Caspian and Euxine were united, it is impossible that either could have communicated with the sea.

Here then we find the desiccation supposition not only unnecessary, but an absolute encumbrance. It accounts for nothing that is not otherwise accounted for; and it requires for its support the invention of facts unrecorded, and of which we have not even circumstantial evidence.

Undoubtedly, on the disjunction of the Caspian and Euxine, which must have happened a few months after the escape of the latter to the ocean, the surface of the Caspian may have been too large for the body of water poured into it, and its desiccation would be the consequence. At the disjunction of the seas, the isthmus at present separating them would have been the level of the Caspian; and this is, at present, elevated far above it. Moreover, we perceive by the current from the Euxine to the ocean that its present surface is inadequate to the evaporation of the rivers it receives; so that when the seas were one, the greater part of the water which submerged the lands in question must

have been received from the feeders of the Euxine. The surface left to the Caspian would therefore evaporate more than its annual receipt of water, and its volume would continue to shrink, until the balance were attained.

Another theory is broached by Mr. Zimmermann, in the work already referred to. It is the theory of the Oxus, in reference to the gradual desiccation. He supposes this desiccation, not to be the mere effect of evaporation upon the waters of the Caspian; but to have affected the sources and tributaries of the Oxus and Jaxartes. In their former fulness he supposes that the Aral may have been but an inland lake of the Oxus; and that in its overflow, it poured into the Bay of Balkaun that body of water which has mined the channel ascribed to the Oxus.

This theory is plausible, and in order to it, we require only one supposition; and that, although unsupported by any record or tradition, is not very difficult of belief. If, therefore, we cannot account for existing appearances without it, we may allow it. If it be needless we shall scout it. Unless our argument has been vain, it is needless.

The result I should deduce from all these considerations is, that in remote times the Euxine and Caspian probably formed together one isolated sea, covering much of the steppe of the Oorahl, that which lies between Astrakhan and the sea of Azov, and probably that bordering the Embah. That this sea in process of time accumulated a sufficient body of water to mine an outlet into the Archipelago, leaving the Caspian isolated, and of surface considerably more extended than at present; which surface, being more than sufficient for the evaporation of its tributaries, gradually dwindled to its present dimensions. That the course of the Oxus, in the days of Alexander the Great (I note this period after the traditions existing in Khaurism) turned by a bold curve round to the south-west, and lost itself in the Gulf of Balkaun. That the Sirr or Jaxartes through its old channel (the Djan Derriah) mingled its waters with the Oxus in the neighbourhood of Bèsh Tishik, and flowed with it to the Caspian. That in the course of time, the Jaxartes, following the invariable law of Nature, mined for itself a course less tortuous than that which it had originally pursued, and found a basin further north, capable of receiving its waters. That the Oxus, released from the thrust from the north-east, which had determined its waters to the Caspian, pursued the natural and more direct course, and fell into the new basin, gradually abandoning, and at length

utterly, the Caspian. That the Caspian, deprived of the waters of two very considerable rivers, gradually shrank in its dimensions.

In this theory, however, there is an assumption, unsupported by any established fact. I mean the former connection of the Caspian and Euxine, and the disjunction of the latter from the ocean.



## APPENDIX D.

*Translation of a Furmaan addressed by ULLAH KOOLIE  
KHAUN, King of Khaurism, to CAPTAIN JAMES ABBOTT, on  
a Mission to His Majesty's Court.*

**T**HE words of the Father of the Victorious, the Conqueror,  
the Lord of Heroes, the King of Khaurism.

Be it known to the sincere and faithful, honoured by our confidence and regard, Captain Abbott, exalted and chosen by our royal kindness and kingly favour, that in these happy times, Moollah Muhummud Saleh, son of Cauzie Muhummud Hussun, having come on a pilgrimage to our heaven-rivalling threshold, has begged permission to follow that gentleman (Captain Abbott), and we granting his request, have sent you the above-named Moollah. Please Almighty God, he, the Moollah, after the honour of presenting himself to you, will fully advise you of the particulars of all occurrences connected with these parts. The words of this favour-breathing epistle, given.\*

\* NOTE.—The above was written in Persian, in compliment to my ignorance of Toorkish, in which all Furmauns and Despatches are written at the Court of Khaurism.

## APPENDIX E.

*Translation of a Treatise upon Damask Steel, by Colonel Anossoff, of the Corps of Engineers, Imperial Army of Russia, Master of the Fabric of Arms at Zlataoost, in Siberia, and reviver of the Damask.*

IN Russia, we understand by the damask, a metal harder, and supplying a material for arms, of keener edge than ordinary steel.

Our poets, ancient as well as modern, generally arm their heroes with damask blades, a proof that this kind of arm has long been known in Russia; although the art of their fabrication was unknown, and that of distinguishing them was anything but popular.

The original country of the damask is the East, and there is reason to think, that its properties were even less understood in other countries of Europe than in Russia. To judge how far they were from having just notions regarding this metal about fifty-five years ago, one need but cast the eye over the work entitled, "Histoire du fer, du metallurgiste Suedois, Rinmunn," a standard work in its day. Even to our own days, the nature of the damask is an enigma, not only as regards its chemical structure, but even its physical properties.

All the researches of chemists have, until now, failed of discovering any essential difference between the damask and ordinary steel; which, nevertheless, proves only that the analysis has been imperfect, it is only want of means that prevents success. Notwithstanding the rapid progress of chemistry, it has not yet attained perfection, and perhaps many things must remain for ever impenetrable secrets to the art. Although the chemists of the present day presume that the natural damask is the effect of a crystallization

produced by retarded cooling of the heated metal; yet, not having the means of producing a damask equal to the ancient work of Asia, they cannot establish this ground, although they have before their eyes the laws of crystallization discovered by the mineralogist Haüy.

If crystallization generally is but the result of the structure of bodies, under certain physical considerations, the question follows, wherefore in the damask is it not the result of a similar cause, and as common steel acquires no visible damask by gradual refrigeration, is not this a convincing proof that the composition of damask differs from that of ordinary steel. If chemical analysis fails to discover that difference, we can only conclude that it answers not its end. The researches of metallurgists and of artificers, who have been at pains to make the damasks, and to inform themselves of the ancient art, have made no decisive progress. I have seen no damask of superior quality wrought in Europe; and that which has been written upon the subject gives no sufficient light; for I have found in no treatise upon the damask any provision for perfecting the steel. Thus, on one hand, the imperfection of our chemical knowledge, and, on the other, the difficulty of fabricating the damask, leave Europeans still in uncertainty as to its merits. Many scientific men, relying upon chemical analysis, refuse credence to the superior qualities of the damask, whilst amateurs, who have any knowledge of the subject, set as great value upon it, as do the people of the East, and willingly pay 50*l.* and upwards for the best damask blade.

Time out of mind the damask has been used in Asia; and to this day it has lost nothing in price. Nevertheless, the Orientals, although less advanced in knowledge than ourselves, could not be deceived, throughout the course of ages, upon the merits of objects purchased only at a very high price.

It is about ten years since this consideration made me doubt the infallibility of the results of chemistry, and incline to the judgment of the ancients, as better founded upon the question of the damask. Thence originated my desire to observe the different qualities, and to discover the means of its fabrication.

The first comparison of the Russian damask before the tribunal of the public, at the approaching exhibition of Russian fabrics, induces me to publish, although in an abridged form, my ideas upon the subject of the damask, acquired during an experience of ten years. Perchance

they may serve to facilitate a discrimination of the various kinds of damask, to such of my fellow manufacturers as have yet enjoyed little opportunity of examining and testing them.

All steel, which exhibits a surface figured with dark lines, is called damask.

In some of the various kinds of steel, these figures appear immediately after burnishing, while in others dilute acid is necessary to bring them out. The juices of plants and ordinary vinegar suffice for this effect. The process of bringing out the figures of steel is called corrosion.

The damascene which appears upon the surface of steel is very various: nevertheless, this damascene does not *alone* confer upon steel the title of damask; on ordinary steel, similar figures may be brought out, by subjecting it to corrosion, after having designed upon it the figure required; but whatever pains may be taken to make such resemble genuine damask, the eye of a connoisseur easily detects the counterfeit, without examining the quality of the metal. Hence has arisen the epithet of "false damask."

A second kind of damask exhibits also an artificial damascene, which nevertheless is peculiar to the metal itself, so that, how often soever it is repolished, the same figure will reappear whenever it is subjected to corrosion. This damask is known as "artificial damask." It is composed of several sorts of steel interlaid with iron. The beauty of such damask is various, and consists partly in the quality of the several materials, partly in the skill with which they are worked together. These artificial damasks are chiefly wrought in Asia, viz., India, Turkey, Georgia; but the artificial damasks of Europe have attained as yet no great reputation, because the European workmen are more intent upon producing elegant figures on the steel than on improving the metal itself. Thus the artificial damasks, as those of Solinger and Klingenthal, although exhibiting the damascene, have not the figures characteristic of superior metal.

In fine, whatever may be the beauty of artificial damasks, they will not bear comparison with good natural damasks, for, if filed, the damascene does not reappear.\*

\* I must beg to differ with my ingenious friend in this matter; if, indeed, I have rightly translated him. Damask formed of mixed metals will reappear, however much it may be filed. This is a fact well known to all gun-makers, who employ iron of several different colours, in forging gun-barrels, to give them what is called the twist, in other words an artificial damascene. My friend must be here alluding to "false damasks."

The natural damasks of Asia differ from the artificial in the reappearance of their inimitable and (so to speak) innate damascene, as well as by the faculty of reproducing the same damascene after having been filed, if the constituent particles remain unchanged.

In Asia we observe many kinds of damask. The difference between them depends upon the places in which they have been wrought, the manner of their fabric, and the various qualities of the material. Those most in use are known by the names Daban, Kara Daban, Khorussaun, Kara Khorussaun, Gundo, Koum Gundy, Neuris, and Schaum (Syria).

The Orientals judge of the goodness of the damask by its figures, by the colour of the ground (that is the intervals between the figured lines), and by the play of colours. They consider the Daban and Khorussaun (to the latter they sometimes add Kara, or black) to be the best blades. The Schaum is the least esteemed. The constant experience of many years assures me, that the marks upon which the Orientals found their judgment of the goodness of the damask are a more certain criterion of the true quality of the metal than all the tests to which it is subjected in Europe; these enabling the testers to form no more than a proximate estimate of the quality of the steel, more generally during the process of fabrication, and not after completion of the object, the quality of which still remains to be determined by proofs, conformed to the purpose for which it is designed. As the mark of the workman is the sole guarantee of the quality of the work, so the Asiatic is never deceived in the intrinsic value of the damask, and fails not to laugh on seeing a European test its quality by filing it, or making it cut iron, especially as the hardness of metal is conditional, depending upon its temper. If the damask be carefully corroded, all further test is needless.

As above stated, the first and most essential sign of the damask is its damascene. In proportion as it is thick, defined, fantastic, in the same proportion is the quality of the metal fine. The thickest damascene is about the size of the notes of music, the middling as large as ordinary print, and the finest is that which we can just follow with the naked eye. As to the method of recognising the quality of damask by its figures, and to the reappearance of the damascene, although they depend upon invariable laws, it were easier to give an idea by samples than by simple description. Nevertheless, it may not be useless here to add certain directions upon the



subject, which are not founded upon practice alone, but proved by the process I employ in the fabric of damask.

Like written characters, the damascene consists of points, of right lines, and curves, which serve to distinguish the quality of the damask, as follows :—

1st. The damascene formed principally of right lines almost parallel denotes the lowest quality of the damask.

2nd. When the right lines become shorter, and are partly replaced by curves, they denote a better quality than the first.

3rd. When the lines are interrupted, show points, and when the dimensions of the curves increase, this is a still better symptom.

4th. When the interrupted lines become still shorter, or, rather, when they change to points, as they increase in number, so as to form in the breadth of the steel here and there, as it were, nets, interlinked by threads which undulate in diverse directions from one net to the other. In this case the damask approaches perfection.

Finally, when the nets open further to form figures resembling grapes, or when they occupy the entire breadth of the steel, and partake it in nearly equal articulations, in that case the damask may be recognised as of the highest possible quality.\*

Another feature, by which the quality of damask may be understood, is the hue of its ground. The deeper the tint, the more perfect the metal. The ground of the damask may be grey, brown, or black.

A third feature is the play of colours upon the metal, when its surface is subjected to an oblique light. In observing many thus, we perceive, that some amongst them show no variation of tint, whilst others take a crimson or a golden hue. The more perceptible this play of colours, the finer the quality of the damask. Nevertheless this test is affected by the degree of corrosion. When the corrosion is very great, the play of colour is not observed. No art can produce the red hue upon inferior damask. Therefore the damask may be divided into two distinct classes, viz. that which has the red hue, and that which wants it.

When the three characters, above noted, are found in

\* Damask blades of this description are found in the Museum of rare objects of the Aide-de-camp General, Perrofski; an officer who, by his love for the arts and sciences, has entered deeply into my researches, and by his condescending kindness in procuring me access to Damasks of the most perfect kind, has greatly contributed to my stock of information.

union and at their maximum, we may confidently pronounce the damask to be of the most perfect kind, which will in no case fail of the following qualities:—

Perfect malleability and ductility.

The hardest possible substance after tempering.

The keenest and firmest possible edge.

And

elasticity, when properly tempered.

The other damasks possess various degrees of perfection, according as the three above-named qualities are more or less remarkable.

I do not follow the nomenclature of Eastern nations in defining the varieties of damask, because they do not always denote the various degrees of its perfection. It appears to me more convenient to use in Russia, a nomenclature, founded upon the water alone. By this rule, five kinds of damask may be noted, viz. the streaked, the striated, the reticulated, and the knotted. Each of these kinds may have one of the following characters:—

(a) A damascene, coarse, middle-sized, or minute.

(b) A ground, grey, brown, or black.

(c) A hue changing in the light to red; or exhibiting no change.

Amongst damasks of inferior quality, may be found some inferior to cast steel of medium quality; but it is not known that the best cast steel may compare with the finest damask. Comparative proofs have convinced me, that the damask offers the highest possible perfection of steel; and the relations we receive from those who have visited Japan, the Indies, Persia, and Turkey, are not so exaggerated as many suppose. A well-tempered sabre of good damask, will easily sever bones, iron nails, and the most flimsy kerchief as it floats in the air. But I must beg leave to doubt the possibility of performing similar feats, with similar ease, with European blades, such as those of Klingenthal, as we are assured, in a late publication;\* for I am persuaded that the blades of Klingenthal, of Solingen, as well as those of Zlataoost, of similar temper to good damask, cannot be compared with the latter, whether in edge, in solidity, or in elasticity.

The employment of damask might, I think, be extended with advantage not only to the fabric of arms, but in general to every steel article requiring edge or solidity.

\* "Manuel complet de Travail des Métaux, traduit de l'Anglais de Docteur Lardner," par A. D. Vergniaud. Paris, 1838, tom. i. p. 233.

So far Colonel Anossoff; a man whose researches in this department of science have enabled him to revive the natural damask, in a degree of perfection which I have never observed in the workmanship even of the ancients, and which certainly cannot be approached by fabrics of any Eastern nation at present existing.

This, it will be allowed, is very high authority: the more especially, as the Russian collections exhibit probably a greater variety of damasks, than those of any other European nation. And to differ in any point with such an authority, may not only seem presumptuous, but may absolutely ensure the rejection of my opinions as futile. Nevertheless, as I have taken upon me to reprint his valuable remarks in a work of my own, it seems incumbent upon me to add to them some of the results of my own experience.

I have from childhood had a passion for everything connected with arms, and have never neglected an opportunity of examining such as came within my reach, and of reading and carefully treasuring all that is written upon the subject of their qualities and construction. I have also cursorily run over great part of Asia, have been many years in India, and have examined three or four of the principal collections of blades in Russia. The result of my experience and researches, would assure me that either Colonel Anossoff's Oriental classification differs essentially from that prevailing in Khorussaun, or that our estimates of the qualities of the damask are at variance.

The blade known in Khorussaun as the Khorussaunee blade, has a very dark hue, betraying a steel highly carbonized. The figures of its damascene are very various, and I despair of giving any distinct idea of them without the aid of plates, which my present position precludes me from attempting; the more especially as nearly all my collection of swords and daggers has been lost in my late wanderings.

1. The kind least esteemed is a light grey, having a granulated surface, the spots of which are rather long in the course of the metal. This kind is also forged at Lahore and Siroee.

2. The second kind has a figuring of coarse dark lines upon a grey ground. These lines exhibiting figures almost precisely similar to the grain of a young oak, when the oblique section has passed near the centre of the tree.

3. A third has the same grey ground and dark irregular lines; but these are more continuous, and not disposed in

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concentric figures, but have rather the appearance of tissues of wire running into every serpentine shape.

4. A fourth is a repetition of the last, but the lines are finer, and the figures more uniform in their irregularity, forming homogeneous masses, so to speak. This is the kind most highly esteemed by the people of Khorussaun. It varies greatly in beauty and value, and may be purchased at from 5*l.* to 500*l.*

5. A fifth kind exhibits a series of articulations, of which I have counted thirty-six in a sword-blade. These articulations, or knots, are formed by dense masses of nearly parallel lines, disposed lengthwise in the blade; the masses running into one another. At the junction they are excessively fine. On turning the blade, it will be found that each junction on the one side corresponds with the centre of a mass on the other. This is certainly the most beautiful variety of Khorussaunee blade; but I have not observed that it is so highly esteemed as the finer kinds of the foregoing variety. It varies greatly in quality. The finest lines denoting that which is considered best.

All these blades when attentively scrutinized will be found to possess a seam down the back. None of them possess any elasticity. They will either break short like cast-iron, or bend like lead. Their shape is a simple and often an abrupt wedge; the very worst of shapes for cutting, owing to the great friction which the lips of the wound exert upon the sides. Their figure is too crooked for defence. They are not esteemed, unless a cat can walk under the curve when placed edge upwards on the earth; neither is this degree of curve sufficient to confer great value, unless it be elegant in its gradations. The edge is generally obtuse, and seems formed rather to bear the shock with armour and with other blades than to cut deep. The breadth is seldom great, but they are thick at the back, and always ill-poised. The best are from Isfahaun; but I understand that the art is almost lost even there. I have never seen a Khorussaunee sabre pointed with a double-edge. It is true that the blade is too crooked to be used in thrusting; yet I have seen Damascus blades equally crooked that had the double-edged point.

The daggers of Khorussaun are somewhat different in water or damascene from the sabres of that country; greater care seems to have been taken in the process. The lines upon them run into the most delicate and perfect spirals, and minute curves. They are generally of the most elegant figures; seldom double-edged, probably from the supersti-

tion against this figure prevalent at Khiva, where the double-edged dagger is religiously disused, because Hosein, the son of Ali, was slain with a double-edged knife. The point is generally triangular and tapering, serving well to force the links of chain armour, which was once commoner than at present. They have, however, a double-edged dagger called Khunja, which is worn in Persia, although that people being Sheeahs, are so much more interested in the fate of Hussun and Hosein.

One of the peculiarities observable in all good Khorussaunee blades is that towards the edge, the hue of the steel increases in depth, betraying more strongly the presence of carbon.

In Colonel Anossoff's oriental nomenclature, occur several names unknown, I think in Khorussaun and India; for instance, Daban, Gundy, and Neuris. Upon these I can of course offer no remarks. But with respect to the blade of Schaum, I know not how the Tartars dwelling in Russia may apply the epithet; but its real and original meaning is the blade of Damascus; a city which has given name to all steel fabrics exhibiting upon their surface what is termed water. It is true that the art of damascening seems in the present day to be lost at Damascus; and the blades forged in Syria may therefore deserve the contemptuous estimate which the Tartars of Russia seem to entertain for them. But there can be little doubt, that of all watered blades, the Damascus blade was the most perfect, and the only blade of this description anciently forged that had any elasticity. I confess I have never met with an elastic Damascus blade; but there seems to be sufficient evidence that the ancient fabric was elastic. And as European travellers would naturally, after the fashion of their people, test any sword brought for examination by bending it, they could scarcely have fallen into error on this point.

A blade that was in my possession, essentially different from those of Khorussaun and India in figure and texture, and wrought in Egypt, probably by Syrian workmen, exhibited the most exquisite water, and an edge that I have never seen equalled. But, although not brittle, it was inelastic. It is to be observed that such blades are generally so massive as to render elasticity a matter of little moment, as they will not shiver in any concussion, and scarcely any force to which a sabre is liable will materially impair their straightness. Their colour is a very pale azure. The streaks are delicate, elegantly waved and curved, much

fainter than in the Khorussaunee blades, and appear to be brought out without the aid of acids, by the mere action of the atmosphere. Nothing that I have seen approaches in beauty to these blades, or in firmness and keenness of edge. The people of Khorussaun term them Misranie, that is Egyptian, and believe that they will sever steel. The kingdoms of Egypt and Syria having lately been under one head, I have little doubt that whatever art of damascening remains in either land, will at present be found at Alexandria and Cairo.

The streaked damask spoken of in Colonel Anossoff's Memoir, I have not noticed, because I do not conceive it to deserve the title, being a wretched imitation of the Khorussaun blade.

Of the damask of Hindoostaun, I am not prepared at present to speak largely. It is forged at Guzeraut, Siroee, and Lahore. Its water is granulated. Its edge is keen. It is, I believe, invariably brittle. I must except the Siroee blade, as I have seen of this but few specimens. That of Lahore appears to me the worst. The damask of Guzeraut is extremely hard and keen-edged, but so brittle that a back of soft iron is added, as in bone saws, to fortify it. It is one of four kinds of blade forged at Guzeraut, if I may credit general report; one kind being fabricated at each of the four gates of the city. One of the plain Guzerautee blades is elastic, and superior to any other of Indian manufacture.

The Russian damask, discovered or revived by my friend Colonel Anossoff, is a peculiar modification of cast steel, by which it is impressed with a peculiar character, in its crystallization; which character betrays itself, when the corrosion of acids, by acting more violently between the interstices of the structure than elsewhere, traces out the arrangement of the crystals. This property is communicated to the damask of Zlataoost by a process tending to perfect the quality of the steel, and to impress upon cast steel the elastic properties of a softer material. The general fault of European blades is, that being forged of shear steel, for the sake of elasticity, they are scarcely susceptible of the keen edge which cast steel will assume. The genius of Anossoff has triumphed over this objection, not in hardening the soft steel, but in giving elasticity to the hard; and it may be doubted whether any fabric in the world can compete with that of Zlataoost, in the production of weapons combining in an equal degree edge and elasticity. The water of this variety of damask resembles most that of No. 5 of my list above. It is a suc-

cession of small bundles of almost parallel lines, occupying the whole breadth of the blade; the ends of the bundles crossing and mingling at the point of junction. I have called them nearly parallel lines, because such they are to superficial observation. They are, however, a series of minute curves, forming together lines, disposed in bundles articulated together, and dividing the length of the weapon into many sections. They have not the regular articulation of the articulated Khorussaunee blade, but their lines are infinitely finer. I have seen several which were condemned for insufficient temper, submitted to the action of the engine by which they are broken. The blades were bent double, and back again several times ere they could be divided. The red hue observed upon damask blades I have seen only on those of Zlataoost.

Since the publication of the first edition of this work, I have witnessed the whole process of forging the cast steel or damascene blade, as practised at Goojrat, in the Punjaub; this must not be mistaken for Guzerat in the west of India. I here reprint the description, which I sent for publication to the *Journal of the Asiatic Society*.

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*Process of working the Damascus Blade of Goojrat.*

I have just returned from Jullalpoor in Goojrat (the Goojrat of the Punjaub), and am prepared to describe the whole process adopted there in the fabric of sword blades.

The blade of Goojrat is of two kinds, the simple and the mixed damask.

The simple damask is precisely similar to the damask of Isfahaun in Persia. Its damascene is a granulation covering the entire surface of the blade, and often disposed in lateral processes; as if the blade had been woven throughout of infinitely fine wires. At other times, this granulation is streaky like a skein of floss silk that has been rumbled into innumerable wrinkles too minute to be followed by the eye.

At other times it has the grain observed in timber, when intersected obliquely.

All these different kinds are the same substance submitted to the same process. At least, the general treatment and intention are the same; and the differences arise from accident, not design.

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The substance is a small cake of cast steel weighing about two pounds, and exhibiting manifest symptoms of the fluid condition in which it acquired its plano-convex shape. That is the lower or convex surface, bears the impression of the coarse gravelly crucible in which it was cooled; and the upper or flat surface has those concentric wrinkles and radiations, which all metals take in crystallizing after fusion. This cast steel (*fowlahā*) is purchased at Umritsur in the small cakes above noted. The natives know not its origin, but only that it comes from the south, and can be purchased at Delhi, in large as well as in small cakes. In India, if the same question is asked, the natives reply, that it comes from the north. It is, probably, therefore, brought up the Indus and Sutlej from the Persian Gulf.

The accompanying figures 1 and 2 represent the plan and profile of a mass lying upon the table before me. Now, upon considering the internal structure of this, we are aware that it is a bundle of concentric needles crystallized around a porous centre, the vesicles of which are coarse and apparent, formed by the splash of the metal as it fell fluid into the mould, or of the dross and earthly particles floating at surface in a crucible. These I have rudely represented in dots in figure 12. It is also manifest, that the most solid portions of the mass are the lower or convex surface. And, accordingly, in beating it out into a bar, great care is taken to preserve each surface distinct from the other, in order that the edges of the lenticular mass may become the edge; and the flat, porous surface the back. Under any other disposition the damask figures would be confused and unseemly; and, as cast steel cannot be welded by any art known in Asia, the porosity of the centre of crystallization in the mass, would either offer a jagged, flawed edge, or one of the sides must be disfigured and weakened by it. And thus the arrangement pursued in the fabric of the simple damask blade is suggested by sound sense. The elegance and symmetry arising from the arrangement is the accidental but necessary consequence.

The mass of cast steel being brought to white heat and held, as represented in figure 3, edgewise upon the anvil, is beaten into a square prism or bar—an operation of about two hours' duration. When the requisite length is attained, the bar is flattened under the hammer, those sides in the bar which had been the edges being placed the one above the other below, so as to become the flat surfaces of the blade. The blade being shaped with the hammer and file and



roughly burnished, is brought to a dull red heat in a long charcoal fire,—a long vessel of common oil is placed within reach, and the blade is plunged by successive drawing cuts edge-foremost into the oil; so that the edge becomes the most highly tempered part, and the back remains the softest. The excessive temper is abated in the usual manner, by laying the blade over a slow charcoal fire. It is then burnished and ground, and being carefully cleansed from grease in wood ashes, white vitriol (*kusses*) dissolved in water is rubbed over all the surface excepting the edge. This, eating deepest between the interstices of the crystals, exhibits their arrangement which constitutes the damask of the blade.

In following the mass of cast steel through all the changes of figure produced by the action of the hammer (figures 4, 5, 6, 7, 8), we perceive that as it cannot be welded, the pores in the centre of crystallization must remain, although immensely elongated under the extension of the mass. These, accordingly, exhibit themselves in an irregular and ugly seam in the back of the blade, impairing both its elegance and its solidity. And hence it is manifest, that in order to the production of a blade without flaw, either the porous heart of the mass should be ground out previous to the action of the hammer and the hollow be refilled with shear steel, or the blade should be forged of excessive breadth, and the unsound back be ground away.

We further observe, that as the flat surfaces of the blade (figure 10) are formed of the edges of the lenticular mass (figure 11) they present a section across the crystallization; rectangular in the centre, but of various obliquity toward either end. It follows, that the less the original mass is altered by hammering, the more nearly lateral will be the disposition of the dots representing the ends of crystals—and hence the various figures presented by the same metal under slightly different treatment. It is also apparent, that these figures will materially alter, according to difference in the shape of the original mass, and it may be reasonably doubted whether the shape in which the cast steel is brought to India, be the most conducive to symmetry of damask or to soundness of fibre.

As the damask of a blade is the map of its crystallization, so it is probable that the figures alter according to the purity of the iron of which the steel is formed, the quantity of carbon contained in it, or to both these circumstances combined.

Colonel Anossoff, himself the reviver, if not the inventor of the elastic damask, lays down the following laws, as the test of quality of the damask, viz. :—

1st. The damascene formed principally of right lines, almost parallel, denotes the lowest quality of damask.

2nd. When the right lines become shorter and are partly replaced by curves, they denote a better quality than the first.

3rd. When the lines are interrupted, show points, and when the dimensions of the curves increase, this is a still better symptom.

4th. When the interrupted lines become still shorter, or rather when they change to points as they increase in number, so as to form in the breadth of the steel, here and there, as it were, nets, interlinked by threads, which undulate in diverse directions from one net to the other; in this case the damask approaches perfection.

Finally. When the nets open further to form figures resembling grapes: or when they occupy the entire breadth of the steel and partake it in nearly equal articulations, in that case the damask may be recognised as of the highest quality.

Now, whilst I concur with Colonel Anossoff in believing that a connoisseur may read the quality of damask steel in its damascene, I rather doubt the above being the key to the language, because the globularity of the marks must depend very much upon the angle of section of the crystals, an angle dependent upon the figure in which the steel was first cast.

Several very costly damask blades were exhibited to Burnes at Caubul, and it was explained to him that they were valued according to the continuity of the flossy streaks from hilt to point. I myself observed, when in Khorussaun, that a decided preference was given to the streaked variety, viz., to that which appears like an amalgamated mass of infinitely fine wires. It will be seen from the process of forging the simple damask that any continuity of fibre must be a mere accident, and denotes nothing as respects the quality of the metal.

I have before me a beautiful specimen of Siberian damask, given me by Anossoff, and presenting upon its surface the prismatic play of colours which he values so highly. In appearance it differs from the Jullalabad blades chiefly in the greater uniformity of its interlaced streaks; attributable probably to a better figure in the mass of steel from which it was forged. It is elastic. The simple damask of

Jullalabad, being tempered in oil, has little elasticity, and the makers will not warrant it to undergo any proof. It is liable both to bend without recovery and to snap short on concussion. The same is observable of the damask of Khorussaun, constructed by a similar process. The cast steel, when tempered in water, becomes too brittle for sword blades, and the elasticity given by oil is not greater than that which brass possesses.

A very elegant elastic blade which I purchased in Siberia, and thought cheap at twenty guineas, exhibits a damask of oval concentric rings, so regular and beautiful, that I would not believe it to be a real damask, until a portion of the blade had been burnished and the acid applied in my presence, when the re-appearance of the damascene, placed the matter beyond doubt. I have seen a similar though less beautiful damascene upon daggers forged at Isfahaun. It is difficult to imagine this to be the mere exhibition of crystallization.

The simple damask of Jullalabad is wrought into three figures:—1. The very narrow, rather thick, much-curved Khorussaunee sabre—whose section is an abrupt wedge, unwieldy in the grasp, and as unfit for offence as for defence. 2. The broader, much-curved, plain or fluted blade of Damascus, with a double-edged point, which its curvature nullifies. And 3. A long straight single or double-edged blade, broad, thin, and fluted, wider near the point than at the hilt; always set in a basket hilt, with a pommel projecting three inches to protect the sword-arm, and much used by gladiators who exhibit at the Mohurrum.\* All are forged in the same manner from the same material, yet each has its own separate Damascene, owing to the greater diffusion of the grain of crystallization in one kind than in the other. In the very narrow blade it is more streaky, in the broad blade it more resembles the most delicate of the streaks upon watered ribbands. The darkening of the blade toward the edge, observable in Khorussaunee sabres, is not visible in these—I attribute this darkness to an increase of carbon. But at Jullalpoor, the sword-cutlers think it proceeds from increase of temper, and that the stain upon the damask is dark according to the degree of its temper.

Such is the secret of the pretty but useless damask of Goojrat, at least of the simple variety. The compound damask is far less elegant, but may constitute a good blade, little in-

\* It is supposed to represent the blade with which Hosein, son of Ali, was murdered, and is called Seif.

ferior, perhaps, to the produce of Solinjer, though certainly less elastic. The following is the process employed in the fabric of the Sukkaila or compound damask.

A ribband of keeri or shear steel being bent into the figure of a syphon (fig. 13), is filled with six or more ribbands of cast steel, blistered steel, and shear steel, as accompanying diagram. I distinguished between cast steel and blistered steel, because the first has been in actual fusion, whereas the second appears to me that which goes in England by the name of "cast or blistered steel," and comes from Europe in small square bars. The mass being well hammered at welding heat, is doubled, welded, redoubled, and rewelded. A small bar of shear steel of similar length is then welded upon the side which is to be the back, and a similar bar of cast and blistered steel well mixed together is welded for the edge. It is then beaten out, flattened and shaped into a blade, and tempered in water. The damascene of this blade is coarse, and resembles the transverse lights upon a watered ribband. It has a moderate elasticity, if well tempered; but of course its quality must depend chiefly upon the fineness of the steel employed in its fabric, and there is little choice of material in India.\*

There is no doubt that a blade may thus be constructed, the edge of which may be keen as that of cast steel, whilst sufficient elasticity is preserved to render it proof against distortion or fracture under very severe shocks. And if, instead of thick ribbands of the several metals, fine wires were employed, an elegant damascene might be the produce. This, I am inclined to think, is the original Damascus blade, as distinguished from the blade of Isfahaun; for, as its celebrity was greatest when defensive armour was in common use, it is absurd to suppose it could have resembled one of the faithless brittle blades of cast steel, which now bear the name.

The price of the Jullalpoor or Goojrat blade in a scabbard, without hilt, varies from eight to twelve rupees (sixteen to twenty-four shillings).

The instruments employed in the manufactory are rude and imperfect. Yet, as the solidity of a sword blade depends much upon the quantity of labour expended in hammering,

\* After writing this, I made the sword-cutler at Jullalpoore forge me a blade of shear steel, edged with cast steel, omitting the blistered steel entirely. With this blade I saw him sever, as if it had been a strip of fir, an iron ramrod, laid upon a block of wood. The edge was not even turned. This blade is in my possession. The Sukkaila blades forged at Goojrat in the usual way, with much blistered steel, always snapped at this experiment.

the very imperfection of the implements may tend to the excellence of the work. A bar of steel under a very heavy hammer is soon beaten out; but every blow unsettles on either side as much of the crystals as it has compressed beneath it: and I believe that four times as much labour should be bestowed in hammering the slightly-heated bar, as at present it receives at Jullalpoor.

But the imperfection of the furnace tends wholly to that of the blade. For as it is impossible to give the same degree of heat to all parts of the weapon at the same time, one portion becomes harder and more brittle than the other, and the blade is more liable to fracture than if the whole were equally brittle. The equal distribution of heat throughout the blade is perhaps attainable only by immersion in molten metals, a method practised, I believe, by Savigni, the celebrated cutler.

It appears to me, on maturer thought, that the lenticular figure of the mass of cast steel may be selected by design, although perhaps originally the result of accident. For, if we follow the arrangement of the needles of crystallization from the mass into the blade, we shall perceive that the edge of the blade must be a serrated spine of these needles, radiating from the elongated ellipse into which the centre has been compressed under the hammer. And, as the power of swords, knives, razors, etc., to sever fibrous substances depends upon the serration of their edge, we have here the finest and most perfect natural saw imaginable, justifying the half-marvellous records of feats performed with Damascus blades. This property being inherent in the structure of the crystallization, is not liable to be effaced by accident or use. The acuteness of the wedge may be impaired, but the teeth of the saw cannot be destroyed.

That this arrangement of the crystals is not disturbed by the action of the hammer we learn from the water of the blade, and from the seam remaining unclosed in the back.

It follows, that however perfect the edge of the natural damask may be, the blade must always be liable to cross-fracture about the centre, where the radiations of the crystals cross the blade at right angles. And, accordingly, Asiatics use such sabres with extreme caution, not ordinarily striking with them, but drawing the edge lightly and swiftly over any unguarded part, a touch sufficing to disable, or severing with them their adversary's reins, a practice which renders necessary the use of chains upon the bridle to the distance of eighteen inches from the bit.

The natural damask seems therefore ill-adapted to the purposes of war, as practised by European nations, but seems especially suited to the fabric of razors, pen-knives, and surgical instruments, in which keenness of edge is of the first consequence, and elasticity of none.

The art of giving elasticity to the cast steel, or natural damask, is the secret of Col. Anossoff, the reviver. I do not consider myself at liberty to reveal it without his express permission, although I think it probable that he has published it in his own country.

This cast steel is quite unknown in England. Its origin in India is doubtful. From its Persian name "Fowlahd," from its coming up the Indus to the Punjaub, and down from the Indus to Delhi, it would seem to be received from the Persian Gulf. It is a reflection upon the arts in England, that it is not known there, as there is no difficulty whatever in producing it.

## APPENDIX F.

ON THE DEATH OF CHARLES XII.  
OF SWEDEN.

SINCE writing this,\* I have met with Fortia's travels in Sweden, in which is an interesting discussion of the question of Charles's death. I have not leisure to transcribe the whole, but will sum up the evidence on either side.

Charles was sitting in a battery, raised against Frederickshall, the fort being considerably higher than the battery, and several hundred yards intervening. It was night; a fire of cannon and musketry was opened from the fort. The king sat, leaning his head upon his hand, his hand resting on the parapet. His head was suddenly pierced through and through by a bullet. Megret and Siquier were the only persons near Charles at the time.

Charles's death, on that day, had been foretold by an officer of high rank, and was generally expected.

Carlberb, Licut.-Colonel of Engineers, in the trenches, says, that when Charles's body was put into the litter to be borne away, Siquier approached the litter, took the king's hat, and put that and the king's wig upon his own head.

Different opinions were entertained of the king's wound. Such as examined it, maintained that it could not have been made from the fortress or redoubts of the enemy. On a draught of the siege of Frederickshall, on which it was affirmed that the king was killed by a shot from the redoubts, an officer of high rank, who was at the time also in Norway, had written in German, with his own hand, "that is not true." No rumour was more common than that Siquier, the king's aide-de-camp, had murdered the king. It is not doubted that he himself confessed it, when ill at Stockholm,

\* See page 102.

in 1722; but it is added, that this illness was accompanied with delirium. Some have imagined that remorse extorted this confession, others again have insisted, that Siquier, after his recovery was tortured with the same remorse, although then perfectly in his senses.

If Siquier was near Kacelbars and others at the time of the king's death, why, upon report attributing it to him, did he not procure their testimony of his innocence?

Mr. Fortia was credibly informed, that Siquier had no duty in the trenches, and hesitated when interrogated as to his purpose in being there.

An old cannoneer of the garrison affirms that there was no firing, that night, from the fort.

The ball passed from temple to temple, when the king was facing the fort.

Mr. Fortia affirms that the king first put his hand to the wound, then half drew his sword.

Siquier took the king's hat, and carried it to the Prince of Hesse, in proof of the king's death.

The prince was washing his hands in an ewer of gold. On learning the news, he presented it to Siquier.

Here we shall perceive many ugly and suspicious circumstances, the whole of which do not amount to even circumstantial proof. Many, moreover, are not attested by particular witnesses, but are rather *on dits*. Most, we think, might have arisen against any man suspected of such a deed. But what is the evidence for the defence?

1. Siquier tells Voltaire, "I could have killed the king of Sweden, but such was my respect for that hero, that, if I had been inclined, I should not yet have dared."

2. Siquier died poor.

3. Siquier affirms, that the bullet with which Charles was shot, was of half a pound weight, and therefore could not have been discharged from a pistol or musket.

We confess we think the defence the worst evidence against Siquier. Let us examine each item of it separately.

1st. Siquier was the king's aide-de-camp. Aides-de-camp we know, may always assassinate their masters, if inclined. Why then the assertion, "I could have killed the king"? Whence the idea? Again, as to his respect for the hero, surely not much was shown in parading in the king's hat and wig, the instant he fell.

2nd. Siquier died poor. It is not said "he lived poor." That he died poor is proof of nothing, especially if he survived his principal, supposing him to have been the murderer.



3rd. Siquier justifies himself by the size of the bullet. Now, as there is abundant proof that the bullet was small, this is an awkward circumstance, because Siquier, who saw the wound, must have known that it could not have been made by a half-pound ball.

The result of this investigation proves nothing. But it may be affirmed that, had Siquier contented himself with a simple denial, his case had been much stronger than he has made it.

“ In the year 1746, on the 12th of July, between five and six o'clock in the morning, the undersigned went down into the Mausoleum, called Carolin, or Palatine, on the Equestrian aisle of the church at Stockholm, and opened the coffin of King Charles XII. defunct, whom they found in the condition and order following. A mattress, or pillow, stuffed with aromatic herbs, covered the face of the king; under his head, and joining his face, was a cloth. The head was uncovered, without any cap, but, in lieu, was surrounded with a laurel wreath. The hair was in good preservation, of a very light brown colour, and the length of a little finger, combed upwards on the sides; but the top of the head was bald. On the right side, just beneath the temple, was a plaster, which stuck so fast that with great difficulty we removed it. When removed, we perceived, and felt, an oblong orifice, slanting in a direction towards the back of the head, seven lines in length, and two in breadth. On the left side, which was covered with a plaster of the same size, the whole of the temple was torn away, and the fragments of the bones evidently denoted the passage of the ball from that part. His face was much wasted, his mouth rather open, and some of his teeth were visible. Under his head were several pillows of white linen, full of fragrant herbs. Along his sides, and on his arms a number of small white bags were laid, filled with the same materials. His arms were stretched by the side of the body, and his hands, covered with white gloves, were placed opposite each other. His shirt was of linen, of a smaller degree of fineness, and his winding sheet of cambric.

(Signed) “ E. H. HARLEMAN,  
E. T. EKEBLAD,  
ANDREW JOHN, of *Haessken*.”

Such are the data offered by Fortia: from which he argues that Siquier murdered Charles XII. Let us see.

Where it is said that the whole of the left temple is torn away, it is added, "and the fragments of bone evidently denoted the passage of the ball from that part." From which part? From the brain outwards or to the brain from the left side? When a bullet has any considerable velocity, its effect upon any hard substance incapable of repelling it is a clean perforation, clean in proportion to the velocity. But if the velocity be inconsiderable, and only sufficient for perforation, the substance penetrated is shattered by the concussion. It is also observable that the power of an arch or vault to resist direct impressions is greatest when those impressions are from without; much less when from within. That a bullet, therefore, on emerging from the skull, is more likely to rend and shatter than on entering it. And that this effect is increased by the velocity lost by a bullet in the perforation of the brain and reverse shell of the skull.

Now we see that on the right side the perforation is barely large enough to admit the smallest bullet; it also does not appear to show a splintered fracture; that on the left the fracture is large and splintered. It is certain, therefore, that the wound was inflicted by either a very large bullet with small velocity, or by a small bullet with great velocity. In the first case, the ball must have entered from the left, and after smashing the right temple and perforating the brain, have drilled a small hole in the right temple. In the latter, it entered at the right temple with full velocity, drilling a small hole, perforated the brain, and had still sufficient velocity on reaching the reverse shell of the cranium to tear away the mass of bone which it could not perforate. Now the former of these suppositions is simply impossible; the latter is in exact accord with observed natural phenomena. Therefore, Charles the Twelfth's death-wound was inflicted by a small bullet or bullets, and not by a half-pound ball, as stated by Siquier in his defence. At the same time, the extent of the fracture on the left of the skull may exculpate him from intentional misstatement, as upon a superficial observation, such a wound might naturally be attributed to a large bullet.

The mask in my possession, which I could not refer to, for the first and second editions of this work, shows the smaller wound on the right temple; but not the larger fracture of the left temple: the mask being restricted to the face, for obvious reasons, and the greater fracture having been somewhat further back than the other. On the right temple, then, is an irregular fissure, two inches in length, by

about two-fifths of an inch in width, being, apparently, two irregular holes in the skull, joined in one. It might have been made by the entrance, or more seemingly, the exit, of two pistol bullets; but could not have been made by a half-pound bullet. It is so ragged a fracture, that no bullet or bullets, with great velocity, could have made it. It is very much larger than that described by the gentlemen who disinterred the body of Charles, as being on the right temple. If it was made by two bullets from the same weapon, then Charles was murdered, for two bullets from a long distance would not have remained together. Two pistol bullets, impelled by a small charge, might perhaps have made such a fracture, and after piercing the brain, have had sufficient velocity to tear out a mass of the skull beyond. But I see not how any bullet or bullets, from the same barrel, could have made such fractures, from any distance.

Of the distance of the fatal spot from the fort, nothing is certainly established. Mr. Cox rates it at 400 or 500 yards. At such a distance, it may be affirmed no bullet so small as that which killed Charles, could have had sufficient force to tear away the reverse side of the cranium after perforating the skull and brain. If, therefore, the nearest parapet of the fort was at the distance supposed by Mr. Cox, then Charles' death-wound was from the hand of an assassin. If the enemy's parapet was much nearer than Mr. Cox supposes, then, as the fort was elevated considerably upon the summit of a rock, the bullet would *probably* have taken a slanting direction downwards, which it did not. But this is a supposition and not a certainty; the course of bullets through dense substances being subject to deflections which cannot be predetermined; and Mr. Fortia is not correct in supposing that want of velocity is indicated by such deflections, for the very contrary is the fact. I have myself seen a matchlock bullet, urged with considerable velocity, run round the skull between flesh and bone from the temple to the frontal sinus; forcing its way at this point between the two plates of the forehead, so as to resist the forceps in its extrication, and send splinters into the brain. And at the same siege (Bhurt-pore) an officer of artillery was shot in the belly; the bullet passing round his body and issuing out at his back, without injuring any vital part. The fact is, that these deflections are the consequences of the resistance which the *vis inertiae* of matter offers to any sudden impression to which it has not time to yield, a resistance increasing as the square of the velocity; a bullet rebounds from water at an oblique angle,

when a stone thrown from the hand at the same angle will enter and sink.

At this distance of time it is not, perhaps, possible to trace explicitly the death of Charles to its origin. But we have seen that there is no impossibility of its having been the deed of an assassin; that a particular individual was suspected of it at the time, and subsequently; and that he took no measures for clearing himself of the imputation which was known to him; alleging in his defence particulars rather tending to confirm suspicion; and in this posture does the affair seem to rest.

## APPENDIX G.

## THE WILL OF PETER THE GREAT.

MENTION has been lately made of the will of Peter the Great; but we believe that no copy of it is to be found in any book of general access. The following translation has been made from a German work, entitled "Geschichte Peters des Grossen, von Eduard Pelz, Leipsic." It is there stated to have been transmitted by the Chevalier d'Eon, French Ambassador at the Court of St. Peterburgh, to the French King, in the year 1757, and to have been made public shortly afterwards. Various opinions have been expressed, as to its authenticity, a question of little moment, since those who repudiate it are compelled to allow that it is a faithful text-book to Russian policy, both before and since A.D. 1757, when it was published to the world.

## THE WILL OF PETER THE GREAT.

"In the name of the holy and indivisible Trinity, we, Peter, Emperor and Autocrat of all the Russias, etc., to all our successors on the throne and in the government of the Russian nation; Forasmuch as the Great God, who is the Author and Giver of our life and crown, hath constantly illumined us with His light, and upheld us with His support," etc.

Here Peter sets out in detail that, according to his view, which he takes to be also that of Providence, he regards the Russian nation as destined hereafter to exercise supreme dominion over Europe. He bases his opinion on the fact that the European nations have, for the most part, fallen into a condition of decrepitude not far removed from collapse, whence he considers that they may easily be subjugated by a

new and youthful race, as soon as the latter shall have attained its full vigour. The Russian monarch looks upon the coming influx of the northerns into the east and west as a periodical movement, which forms part of the scheme of Providence, which in like manner, by the invasions of the barbarians, effected the regeneration of the Roman world. He compares these migrations of the polar nations to the inundations of the Nile, which at certain seasons fertilises the arid soil of Egypt. He adds that Russia, which he found a brook, and should leave a river, must, under his successors, grow to a mighty sea, destined to fertilise worn-out Europe, and that its waves would advance over all obstacles, if his successors were only capable of guiding the stream. On this account he leaves behind him for their use the following rules, which he recommends to their attention and constant study, even as Moses consigned his tables of the law to the Jewish people :—

## RULES.

“ 1. The Russian nation must be constantly on a war footing to keep the soldiers warlike and in good condition. No rest must be allowed, except for the purpose of relieving the State finances, recruiting the army, or biding the favourable moment for attack. By these means peace is made subservient to war, and war to peace, in the interest of the aggrandisement and increasing prosperity of Russia.

“ 2. Every possible means must be used to invite from the most cultivated European States, commanders in war and philosophers in peace, to enable the Russian nation to participate in the advantages of other countries, without losing any of its own.

“ 3. No opportunity must be lost of taking part in the affairs and disputes of Europe, especially in those of Germany, which, from its vicinity, is of the most direct interest to us.

“ 4. Poland must be divided by keeping up constant jealousies and confusions there. The authorities must be gained over with money, and the assemblies corrupted, so as to influence the election of the kings. We must get up a party of our own there, send Russian troops into the country, and let them sojourn there, so long that they may ultimately find some pretext for remaining there for ever. Should the neighbouring states make difficulties, we must appease them for the moment, by allowing them a share of the territory, until we safely resume what we have thus given away.

"5. We must take away as much territory as possible from Sweden, contrive that they shall attack us first, so as to give us a pretext for their subjugation. With this object in view we must keep Sweden in opposition to Denmark, and Denmark to Sweden, and sedulously foster their mutual jealousies.

"6. The consorts of the Russian princes must always be chosen from among the German princesses, in order to multiply our family alliances with the Germans, and so unite our interests with theirs; and thus, by consolidating our influence in Germany, to cause it to attach itself spontaneously to our policy.

"7. We must be careful to keep up our commercial alliance with England, for she is the power which has most need of our products for her navy, and at the same time may be of the greatest service to us in the development of our own. We must export wood and other articles in exchange for her gold, and establish permanent connections between her merchants and seamen and our own.

"8. We must keep steadily extending our frontiers—northward along the Baltic, and southward along the shores of the Black Sea.

"9. *We must progress as much as possible in the direction of Constantinople and India. He who can once get possession of these places is the real ruler of the world.* With this view we must provoke constant quarrels, at one time with Turkey and at another with Persia. We must establish wharfs and docks in the Euxine, and by degrees make ourselves masters of that sea as well as of the Baltic, which is a doubly important element in the success of our plan. We must hasten the downfall of Persia, push on into the Persian Gulf; if possible, re-establish the ancient commercial intercourse with the Levant through Syria, and force our way into the Indies, which are the storehouses of the world. Once there, we can dispense with English gold.

"10. Moreover, we must take pains to establish and maintain an intimate union with Austria, apparently countenancing her schemes for future aggrandisement in Germany, and all the while secretly rousing the jealousy of the minor states against her. In this way we must bring it to pass, that one or the other party shall seek aid from Russia; and thus we shall exercise a sort of protectorate over the country which will pave the way for future supremacy.

"11. We must make the House of Austria interested in the expulsion of the Turks from Europe; and we must neu-

tralise its jealousy at the capture of Constantinople, either by preoccupying it with a war with the old European states, or by allowing it a share of the spoil, which we can afterwards resume at our leisure.

“12. We must collect round our house, as round a centre, all the detached sections of Greeks which are scattered abroad in Hungary, Turkey, and South Poland. We must make them look to us for support; and then, by establishing beforehand a sort of ecclesiastical supremacy, we shall pave the way for universal sovereignty.

“13. When Sweden is ours, Persia vanquished, Poland subjugated, Turkey conquered—when our armies are united, and the Euxine and Baltic are in the possession of our ships, then *we must make separate and secret overtures first to the Court of Versailles, and then to that of Vienna, to share with them the dominion of the world. If either of them accepts our propositions, which is certain to happen if their ambition and self-interest are properly worked upon, we must make use of this one to annihilate the other; this done, we have only to destroy the remaining one by finding a pretext for a quarrel, the issue of which cannot be doubtful, as Russia will then be already in the absolute possession of the East, and of the best part of Europe.*

“14. Should the improbable case happen of both rejecting the propositions of Russia—then our policy will be to set one against the other, and make them tear each other to pieces. Russia must then watch for and seize the favourable moment, and pour her already assembled hosts into Germany, while two immense fleets, laden with Asiatic hordes and convoyed by the armed squadrons of the Euxine and the Baltic, set sail simultaneously from the Sea of Azoff and the harbour of Archangel. Sweeping along the Mediterranean and the Atlantic, they will overrun France on the one side, while Germany is overpowered on the other. When these countries are fully conquered, the rest of Europe must fall easily and without a struggle under our yoke. Thus Europe can and must be subjugated.”



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