

Travels through the southern provinces of the Russian Empire, in the years 1793 and 1794 / Translated from the German [by F.W. Blagdon] of P.S. Pallas.

Contributors

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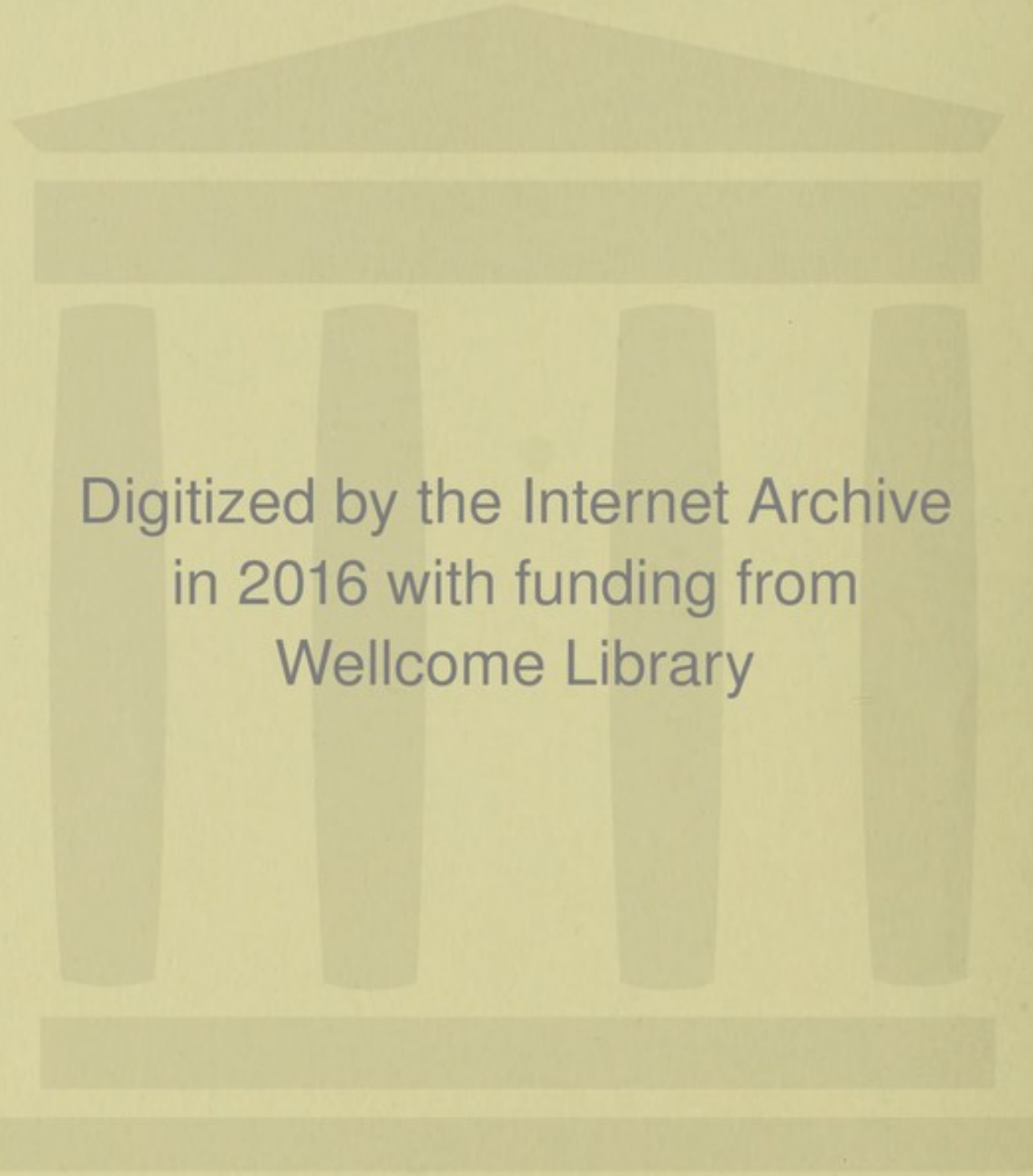
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TRAVELS





TRAVELS
THROUGH
THE SOUTHERN PROVINCES
OF
THE RUSSIAN EMPIRE,
IN THE YEARS 1793 AND 1794.

TRANSLATED FROM THE GERMAN OF
P. S. PALLAS,
COUNSELLOR OF STATE TO HIS IMPERIAL MAJESTY
OF ALL THE RUSSIAS, KNIGHT, &c.

SECOND EDITION,
ILLUSTRATED WITH ONE HUNDRED AND TWENTY-ONE PLATES.

IN TWO VOLUMES.

VOL. I.

LONDON:

PRINTED FOR JOHN STOCKDALE, PICCADILLY.

1812.

TRAVELS

THROUGH

THE SOUTHERN PROVINCES

OF

THE RUSSIAN EMPIRE.

IN THE YEARS 1792 AND 1794.

BY THE LATE JOHN ADAMS, ESQ.

OF THE SOUTHERN PROVINCES.

WITH A HISTORY OF THE RUSSIAN EMPIRE.

BY THE LATE JOHN ADAMS, ESQ.



IN TWO VOLUMES.

VOL. I.

LONDON:

PRINTED FOR JOHN ADAMS, ESQ.

1794.

THE AUTHOR'S PREFACE.

THESE observations were collected during a journey, which the Author undertook in the years 1793 and 1794, by special permission of Her late Imperial Majesty, for the recovery of his health : they appeared to him worthy of being laid before the Public ; as they may tend to supply deficiencies in his former Travels, performed in the years 1768 and 1769, while they will exhibit a view of the changes which have taken place since that period in several districts ; and likewise afford more correct information respecting such provinces of the extensive Russian Empire as have not hitherto been visited, or described, by travellers. Hence, he trusts, the indulgent Public will receive this work with that partiality which his former “ Travels ” have experienced ; especially as he has studiously omitted every trivial circumstance, and inserted in his Journal only the minutes of those facts, which have eluded the attention of other observers.

The *second part* of these Travels will contain a description of the Tauridan peninsula, commonly called the Crimea, and will be embellished with various perspective views of that delightful country. And, though the Author has formerly published a

concise survey of the Crimea in the French language, yet this pamphlet by no means renders a more detailed account of it superfluous ; from which, at length, the natural condition, the advantages of soil and situation, as well as the history, of that small, but ever memorable, peninsula may be sufficiently elucidated.

Many new species of plants and insects have been discovered during this long journey ; but, as the systematic description and representation of these objects are more immediately connected with the completion of the Author's botanical and zoological works, they have in these Travels only been incidentally mentioned. He is, at present, alternately employed in arranging those subjects, as far as his valetudinary state will permit ; and, if his life should be spared for a few years, he hopes thus to bid his last farewell to the literary world, which, he is sensible, has bestowed on him a greater share of approbation than he ever flattered himself to deserve :

“ But the time of my departure is approaching
Nigh is the hurricane that will scatter my leaves !
To-morrow, perhaps, the wanderer will appear—
His eye will search for me round every field,
And will—and will not find me.”—OSSIAN.

*Cujus undenum trepidavit atas
Claudere lustrum—*

HORAT. Epod. ii. 4.

THE TRANSLATOR'S PREFACE.

AMONG the different works which have lately appeared in an English dress, from the prolific German pen, there are few which possess an equal share of merit with the present Travels; though originally written in an uncouth and almost barbarous style.

The illustrious Author has spent the greater part of his useful life in Russia, where the German language is indeed often spoken at Court, as well as among the learned and merchants; but the different *German* works, printed in that country, bear evident marks of being composed in a foreign climate. Such is particularly the case with Professor Pallas's Travels, both the former and the present, which ought to have been carefully revised by one of his literary friends at Leipzig, before they were committed to the press. Thus, the task imposed upon the Translator might have been rendered easy and pleasant; it would have saved him many valuable hours which he has reluctantly wasted in unravelling the Author's perplexed and swollen periods; or, in ascertaining the exact meaning of his obsolete phrases. On comparing the German, or even the French with the English edition, the intelligent reader who is conversant with those languages, will readily admit the justice of these remarks. — Nor would the Translator

have deemed it necessary to insert an apology of so humiliating a nature, were he not persuaded that, under circumstances similar to those in which the celebrated traveller was placed by a bountiful Sovereign, more labour and industry ought to have been bestowed on one of his last literary performances.

On the other hand, the distance at which the Author resides at present, being too great * to admit of regular epistolary communications, the Translator has occasionally been obliged to apply for explanations of obscure passages to those literary friends in London, who were personally acquainted with Professor Pallas, during many years residence at St. Petersburg. Nevertheless, the liberal Critic will find frequent opportunities of substituting indulgence for severity, in his strictures.

There is another circumstance relative to the spelling of proper names of persons, towns, rivers, mountains, &c. abounding in this work; and of which the reader ought to be duly apprized.—The Author has throughout adopted the orthography of German writers, who in a manner translate the *sounds* of the Russian alphabet into their native language; because the numerous consonants prevailing in the former, and which are expressed by peculiar characters, cannot be accommodated to the letters used by the Germans, or any other European nation. Hence it was necessary to employ those syllables, the sound of which bears the nearest resemblance to the Russian pronunciation of such names; and thus it happens,

* Kherfon in the Crimea.

that conformably to the different modes of pronouncing, the same word will be found variously spelled in the German and English editions. This difference, however, could not rationally be avoided; for instance, if the word "Tzaritzin" had been written "Zarizin," and pronounced accordingly by a native of Britain, no Russian could have deciphered its meaning.

EXPLANATION of the PLATES and VIGNETTES contained in the First Volume.

- Plate I. Represents a peculiar species of the domestic Cat, described p. 48. The upper part of the engraving exhibits the coat of arms belonging to the town and district of Mokshan, with the two battle-axes of the Mordvines alluded to p. 50.
- Plate II. Representation of *Strelnie-Gory*, or the sandy rocks forming the bank of the Volga, above Dubofka, p. 74. — In front of it is the river, on which a fishing-boat appears navigated by oars and sails.
- Plate III. View of the Colony of Sarepta, on the banks of the Sarpa, from its western side ; as described p. 99. and following. — In front is represented what is called the “ Vorwerk,” or Farm ; at a distance appear the islands formed by the Volga in its course ; and which are covered with wood. — Between the letters *a* and *b* are situated the church as well as the houses inhabited by the Moravian sisters and brethren ; — *a*, denotes the house of the superintendant or governor ; *b*, the house appropriated to the widows ; *c*, the market-house : *d*, the inn ; *f*, the brewery ; *g*, the garden-grounds ; *i*, tents covered with felt, in the manner practised by the Kalmuks, and which afford shelter to herdsmen ; many of whom have acquired the German language by their intercourse with the colonists.

Plate IV. Exhibits a common Kalmuk, with a rifle-gun over his shoulder, and a horse-whip in his hand; and likewise a Kalmuk Priest, or *Gellong*; as described p. 117.—In the background are represented tents, or temporary felt-huts, inhabited by that nation.

Plate V. A Kalmuk housewife and girl, in their national dress, alluded to in the page last mentioned.

Plate VI. A rural encampment, or what is by the natives called *Aul*, of the Kundure Tartars, who lead a wandering life on the banks of the Akhtouba: where the huts are alternately constructed in the Tartar and Kalmuk manner; the former of which are placed entire on two wheeled chariots, and the latter may be disjoined or taken to pieces. At the same time, there is a representation of the covered chariots exclusively devoted to females; and, in the background, of the sepulchral monuments erected by the Nagays.—The other objects delineated in the plate are evident on inspection: See farther the account given, pp. 172. and following.

Plate VII. Represents a woman and a girl of the Kundure Tartars, (pp. 174. and 175.) in their national *costume*.

Plate VIII. An outline of the idolatrous shrine, or floating Pagoda, before which the Indians resident at Astrakhan daily perform their evening prayers: the names of the idols are specified in the account given pp. 254. 257. and following of the text.

Plate IX. Exhibits a view of the congregation of those Indians engaged in solemn prayer: an explanation of this subject is likewise given in the pages last mentioned.

Plate X.

Plate X. Represents a Trukhman or Turcoman with his bow, quiver, and whip, with which he is usually furnished in his excursions on horseback. — See pp. 298. and following, as also p. 306.

Plate XI. Plan of Greater or Upper Madshary, situated between the Bybala and Kuma. — The description of this engraving is scattered from p. 312. to 316. &c.

Plate XII. A South-West View of four Tartar Chapels or Vaults for Burials, belonging to Great Madshary. — In front, there is a representation of the agricultural implement called *Ralo*, and which is employed by the boors or farmers on the banks of the Kuma; in order to break up arable land that had been ploughed in the preceding years: — the background exhibits a view of the low country abounding in wood, on the banks of the Kuma. — See p. 328.

Plate XIII. A separate representation of the second structure delineated in the foregoing landscape. — See p. 329.

Plate XIV. Plan, Elevation, and Section of the Tartar Chapel which formerly stood in the vicinity of Mafslöff-Kuut; and which, in general, resembles the ancient edifices erected by the Tartars who inhabited those regions. — See p. 336.

Plate XV. View of the whole ridge of mountains covered with snow, and forming part of Mount Caucasus, from the great Elburus which fronts the Black Sea, to the vicinity of the Caspian; drawn in September, when part of the black mountains was already covered with fresh snow or rime. In front of the Plate is represented a bastion of the fortress of Georgieffsk; then the low woody country of the Kuma;

a suburb or out-part of Georgieffk; and, at a distance, the immense plain extending to the foot of the Caucasus. — p. 340.

Plate XVI. View of the situation of the acidulous mineral spring, denominated the *Well of Alexandrof*. *A.* the source of the spring, together with its channel flowing into the rivulet Afada (which, in the text, is called Khofada); *B.* the marshy place where the Afada could be conveniently conducted into the Elkoslu; *C.* the height where the camp is usually pitched for the accommodation of those who visit this medicinal well; *D.* Abassian villages inhabited by the tribe of Dshentimir; *E.* calcareous mountains rising toward the river Malk, and producing a great profusion of herbs; *a, b,* places where the hard tophus is interspersed with leaves and other parts of plants; *F.* the ancient ramparts, — pp. 347. and following, as likewise pp. 367. and 368.

Plate XVII. Mount Metshuka, together with the adjacent inferior mountains fronting it; being divided longitudinally; and consisting of a species of tophus: at the extremity of this elevation, there is a sulphureous bath, the water of which is absorbed in the plain. At a distance may be seen the summits of the Beshtau, or the mount with five heads. — pp. 358. and 368.

Plate XVIII. A Circassian of distinction in his ordinary domestic dress; and a Princess of that nation: in the back ground are Circassian houses; and natives on horseback and on foot. — p. 398. and see also the preceding page.

Plate XIX.

Plate XIX. A Circassian Prince or Nobleman in full accoutrement, and provided with arms, a white jacket over his coat of mail, the bow and quiver; and being ready to mount his horse: likewise a common Circassian dressed in a cloak or mantle usually worn in rainy weather; and furnished with a sabre and a club mounted with iron, which are their constant weapons on their excursions. In the back ground are represented tombs of that nation, p. 400. and following.

Plate XX. A Circassian Nobleman in his complete accoutrements and arms, on horseback. In the back ground are Circassian dwellings, pp. 401. and 397.

Plate XXI. A delineation of the principal races of Circassian and Abassian horses: — *a* represents the whole hoof together with the character which is burnt in the right hip of those animals descended from the race of *Shalock*, being the noblest of the horses bred in the great Kabarda; and the progenitor of which, according to an old tradition of the Circassians, has originally risen from the Ocean; *b*, is the sign of the Circassian race *Tram*; *c*, of *Misost*; *d*, of *Aslangir*; *e*, of the Abassian race *Dshantemir*; *f*, of *Shabulat*; *g*, of *Markhan*; *h*, of *Margush*; *i*, of the Persian race *Tshepalau*; *k*, of *Bekgan*; *l*, of the Abassian race *Lof* or *Lou*, burnt in the right hip; *m*, likewise of the Abassian race *Dudaruk*, burnt in the left; *n*, of *Tabii*; *o*, of *Kurtat*; *p* and *q*, of a race with which I am unacquainted, but bearing the latter sign on the shoulder; *r*, of *Kuralai*, on the hip; *s*, of *Kasanukh*; *t*, of *Kudinet*; *u*, of *Aslansbukh*; *v*, of *Mat*; *w*, of *Ansur*; *x*, of *Afonbukh*; *y*, of *Sakhokh*; *z*, of *Karanuk*; *a* 2, and *b* 2, of races, the names of which I could not learn; *c* 2, of *Babuk*; *d* 2 is unknown; *e* 2, of *Tsunpa*;

Tfunpa ; *f* 2, of *Tysh* ; *g* 2, of *Dshangot-Tarkhanoff* ; *h* 2, of *Seko* ; *i* 2, of *Khatafuk* ; *k* 2, of *Kofh* ; *l* 2, of *Martafa* ; *m* 2, of *Shenebata* ; *n* 2, of *Tafik* ; *o* 2, of *Mudon* ; *p* 2, of *Khofsh* ; *q* 2, of *Khot-dal* ; *r* 2, of *Astemir* ; *s* 2, of *Kelemet* ; *t* 2, of *Khaskukai* ; *u* 2, of *Shomakhu* ; *v* 2, of *Delel* ; *w* 2, of *Eshkot* ; *x* 2, of *Eshish* ; *y* 2, of *Taruik* ; *z* 2, of *Tendyr* ; *a* 3, of *Kandruk* ; *b* 3, of *Kutshuk* ; *c* 3, of the Abassian race *Tramkt* ; *d* 3, of *Shabasgeeri* ; *e* 3, of the best and tallest race of Abassian horses ; *f* 3, of *Tshikhen*. — p. 412.

Plate XXII. Two Ingushians : one of whom is represented with his fire-arms or musket (apparently in a case, suspended over his left shoulder), together with a dagger and sabre ; the other, with the usual shield, and a short pike on which the gun is levelled, when taking aim. — p. 436.

Plate XXIII. A matron in the national dress worn by the wives of the Kozaks, and a girl of Tsherkask. — p. 474.

Plate XXIV. Represents a lady of distinction among the Nagays ; in the middle of the group is a Princess of that nation, attended by a female slave. — In the back-ground appear tents constructed of felt, and *arabas* or two-wheeled carts. — p. 534.

Plate XXV. View of the Fortrefs and the Roads of Taganrog ; drawn from the country-house of the governor : in front, are represented a plantation of mulberry-trees, a grove of willows, and the wharf. — pp. 484. and 485.

EXPLANATION of the VIGNETTES.

- No. 1. (p. 3.) A winter landscape, representing four very large sepulchral hillocks (*tumuli*) contiguous to each other in a wood, near Lake Vertanetz: many similar elevations are scattered on the heights of Valda. — pp. 4. and 5.
- No. 2. (p. 88.) A detached view of a birch-forest, the trees of which were partly broken by the weight of rime and other congelations on their tops; partly bent down into the snow; such as were observed in the spring of 1793, in the district lying between the rivulets Tshardym and Kurdyum, in the government of Saratof. — pp. 55. and 56.
- No. 3. (p. 89.) A pillar of horses' skulls and jaw-bones erected by the Kalmuks, on a sand-hill near the Akhtouba, to commemorate a destructive epidemic that had prevailed among those animals. — pp. 171. and 172.
- No. 4. (p. 107.) Profiles: 1, of a Mongolian girl; 2, of a young female Kalmuk; and 3, of a youth of the Nagay-tribe. — pp. 117. and 118.
- No. 5. (p. 279.) Representation of the manner in which pheasants are taken by means of gins, in the sedgy thickets, on the banks of the Kuma and Kuban. — See the description, p. 316.
- No. 6. (p. 338.) A sepulchral chapel of the Mahometans at Great Madshary; being that structure, which in the XIIth plate is represented as the most distant, and the architecture of which differs

differs from the others ; though its peristyle is already decayed.
— pp. 328. and 329.

No. 7. (p. 339.) Circassian tombs belonging to the family of Prince Dshambulat, in the vicinity of the river Bakfan. — p. 376.

No. 8. (p. 380.) Planimetrical delineation of Mount Burg-uffan near the Podkuma ; and which appears to have formerly been a fortified place. — p. 345.

No. 9. (p. 381.) A sepulchral monument of a Circassian princely family, near the top of a mountain, between the sources of the brook Kurai and the river Malk. The stone fronting the chapel at some distance, bears an inscription in the Tartar language ; the chapel itself is of an heptagonal form, about 13 feet high ; and at the side of its window there is a large man's hand imprinted in the mortar.

No. 10. (p. 444.) Represents a Circassian and an Ingushian Bee-hive.
— p. 412.

No. 11. (p. 445.) *a, b, c, d*, four male statues ; and *e, f*, two female figures hewn in stone : similar images are frequently met with on the steppe between the rivers Donetz and Dniepr, as likewise between the Don and the Kuban, especially on sepulchral hillocks. They probably originate from the Huns or Hungarians ; and it is remarkable that the statues of this description, situated to the East of the river Don, are executed by a much ruder hand. — p. 458. and 459.

No. 12. (p. 508.) An Armenian windmill, with horizontal wings ; such as are very common in Taurida. — p. 478.

No. 13.

No. 13 and 14. (pp. 509 and 541.) Representations of the strata of granite and granite-schist, on the banks of the rivulet Berda ; and which consist of very singular proportions : the farther explanation of this subject will be found in the text, pp. 521 and 522.

NOTICE RESPECTING THE MAPS.

As the completion of the different travelling maps required a longer period of time than the printing of the first volume in the original German edition, they have necessarily been delayed till the publication of the second ; and they will contain :

1. The country of the Lower Volga, with part of the Caspian Sea, and those extensive plains or steppes, situated between the latter and the Sea of Azof.
2. The mountains of Caucasus between the Caspian and Black Sea ; and,
3. Taurida, with its adjacent plains that surround the Sea of Azof and the Black Sea on their northern coasts : — the whole being so arranged that these three maps form one connected series.

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TRAVELS
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IN THE YEARS 1793 AND 1794.

VOL. I.

B

TRAVELS

INTO THE

SOUTHERN PROVINCES

OF THE

RUSSIAN EMPIRE

IN THE YEARS 1793 AND 1794



Suppl. 2. d. f.

Journey from St. Petersburg to Tzaritzin.

SOLICITOUS to remove from the incessant bustle, as well as the artificial society prevailing in the metropolis of the Russian Empire, I applied, towards the end of the year 1792, to our late gracious sovereign the Empress Catharine II. for permission to visit the Southern provinces of her vast empire; partly with a view to recover my former state of health, partly to pursue my general observations on physical subjects, and to complete my collection of botanical drawings. With this intention I engaged a skilful artist, Mr. C. G. H. Geissler, of Leipzig, who accompanied me on the whole journey.

My request was granted, together with Her Majesty's letters of recommendation to all the governors of those provinces in which I proposed to make any considerable stay. Thus en-

couraged, I left St. Petersburg at two o'clock in the morning on the first of February, 1793, accompanied by my beloved wife and daughter; to enjoy with them the first beauties of spring, on the southern banks of the Volga.

The winter-road through the extensive forests of the low woody plain beyond Novgorod was uncommonly good; but upon the stratified mountains, called the heights of Valda, it was, as usual, worse; and we found it extremely rough and dangerous on the heights towards the Tvertza and the Volga, as well as in the vicinity of Mosco; where the numerous caravans passing every year contribute to break it up. This happened to be the case in the present winter, on account of the unusual depth of the snow, drifted in mild weather by the wind, which rendered the road almost impassable. Hence, during our journey to Mosco, we were in continual danger of being overturned; the irregular and deep tracts of the road retarding us so much, that although the distance from St. Petersburg is only seven hundred and twenty-eight versts, it required a journey of almost ten days; an unusual length of time for the expeditious mode of travelling in that country.

The weather had been unusually mild during winter, so that we arrived at Mosco on the commencement of the thaw. — On the night of the 22d of February we reached Novgorod, having observed, in a dusky quarter of the horizon, an *Aurora Borealis*, which diffused a very clear, radiant light, extending North-west, and more faintly North-east, with an intermediate space unillumined.

The ancient sepulchral hillocks (*tumuli*) on the heights of Valda attract the eye of the traveller, particularly in winter, when

when the whole surface is covered with snow; they are still more conspicuous on the heights near the rivulets Cholova and Polomet, presenting, with the tall fir-trees growing on their tops, an uncommonly picturesque winter landscape: one of these hillocks is represented in a vignette prefixed to this work.—On the heights between the rivulet Cholova and the lake Vertanetz, I discovered the first sepulchral hillock worthy of notice, two versts from the little village Bolotnitsa, situated near the Cholova. The three larger hillocks of this group appear almost in a line from North to South. About the distance of a verst northwards, the lake Vertanetz takes its rise; it is surrounded by fir-trees like a garland, and empties itself into the Cholova, which unites at length with the river Msta. These hillocks which we passed, were on the left of the winter-road.

On a rising ground which we gradually ascended, a short distance farther to the southward of the lake, and on the right of our road, about one verst from the village Rachino, we met with the four hillocks represented in the vignette, and which, together with the tolerably large fir-trees and underwood, formed an appearance much too picturesque to pass unnoticed. Those on the northern and southern side were the largest; and several other sepulchral hills were scattered on the coast of the lake Vertanetz, but inaccessible, on account of the deep snow with which they were covered.

Besides these, we observed on the heights near the village Somenka, six smaller sepulchral hillocks, irregularly scattered, having also a very pleasing effect on the eye: and on the most conspicuous height, behind which we crossed the river Polomet that flows through an abrupt dale, our attention was again

engaged by a solitary hillock, larger than the others, and situated near the road.

These hillocks of interment, for notwithstanding their magnitude they cannot be considered as the productions of Nature, are generally raised on the summits of mountains, exhibiting a most airy and beautiful prospect: and I have likewise observed in Siberia, that the ancient cemeteries are invariably in the most pleasing situations. It were much to be wished, for promoting the knowledge of the antiquities of Russia, that some of the landed proprietors would cause these venerable monuments to be carefully explored, so that their discoveries might be communicated to the world.

The strata of coal discovered in these regions, since the year 1763, have not yet afforded a sufficient supply for our metropolis, to render the importation of British coal unnecessary. Nevertheless they excite the hope of accomplishing that desirable object; and though we have not yet been compelled seriously to adopt this resource, it will probably be highly beneficial at some future period, as the price of wood is daily increasing. There is, however, no doubt that much deeper strata of coal must be discovered, before any real advantage can be derived from these mines.

After the lapse of twenty years, it was highly gratifying to observe a considerable increase of commerce and wealth, greater population, and many well-finished houses in *Vyshnoy-Volotshok*; since made a country-town, and which, on account of the principal canals for facilitating the extensive inland navigation of Russia, is one of the most important places connected with the metropolis.

The

The very ancient resident city of the Grand Dukes of Russia, *Tver*, (which, since my first journey has, like the town of Great-Novgorod, been completely metamorphosed) I found so much improved, that it may now with propriety be ranked among the most elegant and regular provincial towns in Europe. It is happily situated in respect to its communication with other places; and enjoys all the necessaries of life in abundance, and at a moderate price. It is customary for travellers passing through this place to be regaled with delicious fresh sterlets, caught in the river Volga, and at all seasons kept in reservoirs.

In *Torshok* likewise I found a great increase of trade. The flourishing Baltic commerce, and the rising price of the exported productions of the country, besides all those which it sends to the metropolis, appear to have given new life to the industry of its inhabitants. But this circumstance is so far unfavourable to the prosperity of the principal towns, as the mercantile advance of all the domestic and foreign articles of luxury, and the price of every species of manual labour rising with the necessaries of life, are not in just proportion to the income of the wealthy.

Mosco has, during the last twenty years, not only been much improved in the magnificence of its buildings, and the refinement of taste and manners, but the luxury of its inhabitants has also increased. The high price of all the necessaries of life, and the profusion of dainties, (which, though formerly rather scarce in this great city, are now principally imported from foreign countries,) formed a remarkable contrast with its state at the time above-mentioned. Horticulture has within these few

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years

years been brought to such perfection, that all kinds of vegetables and fruits are in superabundance; being the only productions of the country which are sold cheap, and which probably will become cheaper every year. The largest shoots of asparagus are reared here in the midst of winter in hot-beds, and in such plenty that they are transported to St. Petersburg. Early fruit is neither scarce nor dear in Mosco: it is not inferior in flavour to that produced in England. In summer the most delicious species of cherries, apricots, peaches, pears, and apples, nay even ananas, are commonly sold at a reasonable price.—All these improvements, made since the year 1770, are chiefly the effects of indefatigable exertion. The numerous private orchards, kitchen-gardens, and hot-houses lately established by the nobility and gentry, have contributed much to the great abundance of vegetables.

It deserves to be recorded here, that the late PROKOP AKIMFIEVITCH DEMIDOF, counsellor of state, by his patriotic example, in importing, at his own expence, many foreign species of fruit-trees, and liberally bestowing the treasures of his garden, has been principally instrumental in promoting this beneficial branch of industry. The inland provinces of Russia are also indebted to this beneficent man, for introducing several useful species of grain. But, alas! his spirit no longer animates the industry of the husbandman; his beautiful botanic garden, which I described in the year 1782, is now desolate; the scarce and valuable plants which he had procured at a great expence from England, and bequeathed to the University of Mosco, are shamefully scattered, inasmuch that scarcely a vestige of his donation remains in its proper place.

Some

Some German gamekeepers have discovered truffles in the vicinity of Mosco, so that they are now sold in the market, in a fresh state, and at a very moderate price, throughout the summer.

Every object we behold in Mosco is, like the city itself, in a certain degree gigantic. Several palaces, in particular, are of a vast size, resembling castles; and they are inhabited by hundreds of servants, who are born in a state of vassalage. The foundling hospital is one of the most extensive charitable institutions in the world. Some of the country residences are planned, and the architecture is finished, in a magnificent style. But the institution particularly deserving notice, is the new *Assembly-House of the Nobility*; which during winter is visited by at least one thousand persons of rank, of both sexes, who appear at the balls and masquerades in very superb dresses. This is undoubtedly the most numerous private association of the kind; and the grand assembly-hall is one of the most spacious rooms in Europe.

Several indispensable arrangements for our journey detained us at Mosco till the 19th of February. During our stay in that city, the weather became so unusually mild for the climate, that the deep snow in the streets began to dissolve, and we had the greatest difficulty in driving with our sledges (the beams of which are covered with iron, the top forming the body of a coach) through these almost impassable streets, till we reached the open fields, where the snow still covered the ground. I directed my journey by the way of Penza, to Saratof.

In the night of the 19th we arrived at the first stage on this road, in *Novaya Derevna*, whence, without changing horses,
we

we proceeded to *Bunkovaya*. On the following morning we continued our journey under a gentle fall of snow, which very much improved the road, that had been almost bare and unfit for sledges. We arrived at Kirshatsh, a village lately invested with the privileges of a town, where we passed part of the night. In this place, as well as at Bunkovaya, some ingenious peasants, who had been employed as labourers in the silk manufactories at Mosco, some years ago established looms and taught their art to others, with such success, that in both places a great number of silk handkerchiefs of various patterns, but of inferior size and quality, are now manufactured, and sold at a moderate price, from one ruble * to a ruble and a half a-piece. The silk for these manufactures is brought from Mosco in a dyed state. From this instance of an industrious disposition, the facility with which the useful branches of domestic manufacture might be established among the country people of Russia is obvious; and this source of wealth could be considerably promoted, by erecting schools for the instruction of persons who would voluntarily come forward to learn different trades. Among these, the manufactures of woollen and cotton stuffs, and hardware, are the most necessary for home consumption, and to prevent the importation of foreign merchandize. Such manufactures could, by proper encouragement, be gradually improved, especially if, in the beginning, some peculiar privileges were granted to the

* The real value of a ruble, by the course of exchange at St. Petersburg, varied, in the year 1797, from two shillings and three-pence one farthing, to two shillings and eight-pence halfpenny. See Mr. TOOKE's "*View of the Russian Empire*," 1799. Vol. iii. p. 167.

manufacturer, for instance, exemption from military service, or other personal immunities.

On the 21st we proceeded on our journey to *Valdimir*, under an incessant but light fall of snow : and towards the evening we arrived at this ancient grand-ducal residence, which is now the seat of a provincial government. I have formerly spoken much in praise of this town, both for its healthful situation and delightful environs. At present it appears to still greater advantage, being embellished with many modern houses built of stone, and several good dwellings of wood, which, at some distance from the town, attract the eye of the traveller, particularly on the heights beyond the river *Kliasma*. It is, however, to be regretted, that, from its situation in a sandy country, thinly inhabited, and for want of manufactures and commerce, this town, though in other respects both pleasant and considerable, will scarcely ever be raised to a flourishing state.

The preceding thaw had rendered the ice on the river *Kliasma* so unsafe, that we discovered innumerable flaws, and that it could not bear the horses on the opposite bank. On alighting, with my travelling companions, and while I was endeavouring to conduct them to the bank, I had the misfortune to fall as deep as my loins into a fissure which was covered with drifts of snow. As there were no houses on the bank, and it was still more dangerous to repass the river, I was under the painful necessity of proceeding in wet clothes on the long stage of thirty-seven versts, (about twenty-five English miles,) to the recently privileged county-town of *Sudogda* ; which, however, possesses few advantages over a village. The bad effects of this accident, with respect to my health, did not appear till the sub-

fequent spring ; and they have laid the foundation of a diseased and valetudinary life. On the same day, being the 22d, we arrived in the vicinity of *Murom* ; and on the 23d passed in sight of that town, and travelled as far as *Lomova*. The warm sandy soil being thinly covered with fir-trees, had scarcely any snow left ; and the ice of the river Okka, over which we were necessitated to venture our lives for twelve versts, to *Lipna*, had already become extremely unsafe, especially in the vicinity of the town, where many breaches had been made for washing leather, woollen and line yarn manufactured in that place.

Late in the evening of the 24th of February we reached *Arfamas* ; after having crossed, with some danger, the ice on the river *Tesha*. The soil, which had been sandy for several miles, near *Lipna* at once changed into a black, rich, arable land, occupying all the plains and downs ; both being peculiarly favourable to the cultivation of hemp. Innumerable bundles of that plant were spread out in the open air, in the vicinity of the villages where, during the winter, it is dried in kilns.

The town of *Arfamas* appears to have increased in trade, but it has not been improved in its buildings. The narrow and irregular streets, and the antique Russian dwelling-houses built of wood, are still the same as I formerly observed. A few rows of sale-shops have lately been erected of stone, on the market-place, near the castle. In the street leading from the river *Tesha* to the market, the eye is engaged with the venerable appearance of an ancient church, the steeple of which has almost lost its equilibrium towards the street, while, on the opposite side, the body of the church appears to have considerably sunk towards a neighbouring glen.

The

The pot-ash manufactories of this place, which I formerly described, have several years ago been relinquished, on account of the insufficient profits they afforded to government. The crown-officers expected to render them as profitable as they had formerly been, when managed by AVERKI KIRILOF, a very skilful and active manufacturer of pot-ash. He first introduced this branch of industry into the Russian forests, by engaging expert workmen from Poland, who understood the burning of pot-ash after the Hungarian manner. But the more extensive establishment, the greater number of peasants employed by government, and the salaries of officers, increased the price of the crown-manufacture so much, that the business was abandoned; and the peasants have since been employed in attending the imperial studs.

From Arfamas, the country along the river Tesha progressively becomes more hilly, with an excellent black soil, which extends through the remaining part of the government of Nishnè-Novgorod, and the whole province of Penza. On the opposite side of the Tesha, the country is more mountainous; the projecting heights display, in various slips, precipitated strata of reddish clay, and are more woody than the banks of the river along which we travelled. Before we reached the village *Netshoëva*, we were obliged to re-pass the Tesha, and travel over a fertile plain, varied with gentle elevations, and interspersed with handsome villages, till we reached *Lukoyanof*, formerly a village, but now enfranchised as a town. During the night of the 25th we rested in this place.

On the following day we traversed an open country, interspersed with gently-rising elevations, and of a most fertile soil,

to *Tolskoi* and *Vasilef-Maidan*. These two villages were formerly much employed in the manufacturing of pot-ash, and are now peopled chiefly by fugitive subjects of the nobility. No man is subject to so many different sensations as a traveller. I could not help feeling great indignation, when I observed here, in every direction, the remains of large oak forests in a desolate state, and productive only of indifferent brush-wood, growing out of the remaining stumps of those magnificent trees. All the timber, and the wood used for wheels, carts, and the implements of agriculture, are furnished by the oak; nay, every gate of the most wretched farm-yard requires two of the thickest and straightest oak-trees, cut down by the Russian boor, without the least hesitation, as he is insensible to their more important uses. Wherever I turned my eyes, I discovered numbers of broad and thick oak planks, two of which only are usually sawn from the trunk of one tree; and which these clumsy architects carry to the neighbouring town, where they are generally used for the flooring of rooms. On the whole road to Penza we in every place found reason to complain of this unpardonable waste of the wealth and pride of the forest.

We changed horses in *Bogorodskoë Selo*; and I observed that from the source of the Teshka towards the rivulet *Alatyr*, (on which is situated *Pusa*, one of the stages on this road,) the country gradually becomes more mountainous, and gives rise to many brooks flowing through narrow channels, till they fall into the *Alatyr*, uniting with the small river *Infara*.

Throughout the government of Penza, beneficent Nature has been liberal in bestowing beautiful forests of oak; and on the banks of the rivulet *Atma*, and its collateral branches, I like-

wife observed several young plantations belonging to the nobility, apparently in a vigorous state, but somewhat too thick for producing full-grown timber. They extend through dales and over rising grounds to a great distance ; and afford true pleasure to the patriotic observer. How mournful, on the contrary, is it to remark, in many other places, especially in the vicinity of the imperial domains, that the young shoots of oak are cut down, and the stumps carelessly left to produce shoots, the leaves of which are devoured by cattle ; or, if left to themselves, stifle each other by the exclusion of light and air, producing only insignificant brushwood instead of the parent tree. It would be an useful suggestion to the uncivilized and negligent country people of these districts, to eradicate the stumps, which, on account of the deep snow, have been left standing a considerable height above the soil ; and to establish nurseries of oak from the acorn : although such advice, if not enforced by a law, would probably be disregarded. On the domains, particularly those belonging to the crown, from which the admiralty obtains much and excellent timber for ship-building, provision ought to be made, that in bushy grounds, or such as are entirely cleared of wood, acorns might be planted, and secured from cattle by means of ditches : thus a new and promising succession of timber would soon be obtained. Without this precaution, a general scarcity of tall oak trees is to be apprehended throughout this territory, which is naturally favourable to their production.

On these and similar subjects connected with the scientific culture of trees, which has hitherto been altogether neglected in Russia, I have, by order of government, in the year 1780, already

already expatiated. I have suggested the necessary proposals for such improvements as in my opinion were the most consistent with the nature and constitution of the country, and which might serve as the basis of a permanent regulation: extracts from these proposals have subsequently been transmitted to all the governments of the empire.

In the small town of *Saransk*, we changed horses about noon on the 27th. Notwithstanding the trade it carries on by the manufactures of soap and leather, it does not appear to be in a state of improvement. In this place, as well as in Penza, and most of the villages of this neighbourhood, the small Asiatic moths (*Blatta Asiatica*, by the Russians called *Prussakee*,) have transmigrated from the Volga, and become very troublesome. We met with them more commonly winged than without wings; and it is asserted that, every where, they drive before them and destroy the great moths (*Blatta Orientalis*; which more properly should be called *Occidentalis*; as America is their native country). They are fond of associating with the crickets, and if both are collected in a glass vessel and placed upon snow, even in mild weather and sunshine, they become torpid, their bodies swell, and they seem to die instantly, but soon recover on being removed to a warm place.

Saransk, where we arrived on the 28th in the afternoon, is one hundred and ninety versts distant from Penza. The whole country through which we passed, is embellished with numerous villages, belonging chiefly to noblemen, and is one of the most fertile grain-provinces of the Russian empire. The oak is here the most common species of wood; while the few forests of firs, in the rich, loamy soil, consist only of crooked and stunted trees

trees covered with branches from the surface of the ground to the top ; and which never grow straight, nor to any considerable height.

The birch and linden-tree delight in this soil, and flourish in great perfection : the former could be easily increased by seeds, and might be used for many purposes instead of the oak. The lime-tree of this country is very conducive to the general culture of bees, and might serve as the most proper tree for groves along the road. This plantation, which was ordered by government throughout the empire, and which had been effected for about two stages from Saransk, is usually so much neglected, or, if attended to, is done with such sapless and weak plants, that they soon wither away, as they are not planted deep enough in the soil, and neither supported nor manured. Hence the necessity of placing at least three vigorous plants in every trench, and of making this in a dry soil, and so deep that it may be filled up till within about nine inches of the surface around it : in this manner more moisture and shade would cherish the root. It is farther necessary to plant more than one row of trees on each side of the road, that they may afford mutual protection to each other.

Agriculture is most shamefully neglected in the government of Penza ; and the boors, though possessing the most fertile country of the empire, live in miserable smoky huts, and in the most disgusting state of uncleanness. Nay, I must confess, that the inhabitants of this district did not appear to me the most virtuous subjects of the crown ; and their conduct towards the nobility, at the time of the rebellion excited by Pugatshof, bears evidence of their depravity.

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Notwithstanding the numerous studs kept by the nobility, horses have, during the last twenty years, been advanced to double their former price, throughout Russia; insomuch that a common draught horse, which was then sold at fifteen rubles, is now valued at thirty or even thirty-five rubles. The boors of these districts almost generally keep horses which are but indifferent, and either of a middle or small growth. Black-cattle are likewise under the middle size. Sheep, on the contrary, are here of a considerable size, and of the species with short tails; their flesh has an agreeable flavour; but the wool is of inferior quality, and generally black: in February they yean commonly two lambs. Every boor likewise rears hogs for his domestic consumption; and in the winter season the pigs, lambs, and calves, live in the same apartments with almost every family. All kinds of poultry are here of a large size; the geese are mostly of a spurious breed from the Chinese, or those with a swan-neck: and in every village pigeons fly about in abundance.

The various species of grain which are principally cultivated in the government of Penza, both for home consumption and exportation, consist of rye, spelt, barley, oats, millet, and buckwheat. Notwithstanding the abundance of those species of grain, there are very few well-constructed mills to be met with; and instead of finding good bread in Penza, we were generally served with the worst imaginable. Although the soil is excellent, we were informed that in most districts wheat will not thrive; and that it is productive only in the vicinity of some villages inhabited by Tartars, in the lower countries of the Ufa. Attempts have lately been made to cultivate a species of oats, which by way of pre-eminence is called the prolific grain, or

Mnogo-

Mnogoplodnoi Oves. I have left with the farmers several species of oats for farther experiments. Hemp is likewise produced here, and converted to manufacturing purposes: and I have no doubt but that of the Chinese and Bolognese would flourish particularly well in this neighbourhood.

All grain is here placed in stacks near the villages, and beside open threshing-floors, till it is again separated and dried in corn-kilns * for threshing in winter: the straw is thrown away, except what is used for the cattle and for thatching. In a similar manner the dung in all these rich countries is cast into pits and pools near the villages, and thus improvidently wasted; because their fallows improve in fertility the succeeding year without manure, and new arable land is in great

* The Russian corn-kiln, *ovin*, consists of a wooden shed made of balks driven together, having a few apertures with shutters in the sides, and furnished within with several cross poles. Adjoining to the shed, an oven of brickwork is made in the earth, from which flues run into the kiln. When the corn is to be malted, the sheaves are hung upon the poles, and a slow fire is kept in the oven, the smoke of which penetrates into the kiln, making the sheaves to reek; the vapour escapes by the side-holes, which are opened at pleasure. In some provinces the kiln is somewhat differently constructed; but the practice of malting the corn in this manner is universal, and is of great and various utility. The grains are indeed smaller for the drying; but it preserves them from corn-worms, renders the grain fit for keeping in granaries, and even incorruptible in long voyages at sea, without rendering it unserviceable for sowing. This advantage of the Russian grain is, however, procured at a great expence of wood; for which, in some parts, perhaps, moss-turf might be employed with the same effect. The corn being malted, it is carried by the Finns into the kiln itself, but threshed out on the floor by the Russians, or on the ice, with small light flails, and purged by casting or winnowing. The generality of countrymen keep their grain in the corn; only some of them grind all their rye immediately into grist-meal. See Mr. TOOKE's "*View of the Russian Empire.*" 1799. Vol. iii. pp. 261, 262.

abundance. If the boors could be persuaded to mix the dung they waste with the ashes of their hearths, with marle which is abundant here, and good black earth, so as to form beds of this composition on dry places, the production of nitre might easily be increased in Russia. Perhaps this object could in some measure be attained, if the labour bestowed on the manufacture of saltpetre were, according to a settled regulation, computed by the fathom, and allowed to the peasants by a deduction from their arrears, or *Nedoimki*, due to the crown.—The crops of hay yield here from fifty to seventy poods * from the desættine †, or two thousand four hundred square roods.

The city of Penza (six hundred and sixty versts from Mosco, and one thousand three hundred and ninety-four from St. Petersburg) surprised me in a very agreeable manner. By the kindness of the governor, Lieutenant-general STUPISHIN, we were accommodated in one of the best new-built houses. When I visited this place in the year 1768, it was then only a market-town, and I found it throughout built of wood, in a wretched and irregular manner, the churches excepted. Since the establishment of the provincial government, many noble families have been induced to settle here, and to build strong, beautiful mansions, disposed in regular streets, by which this city, notwithstanding its hilly situation, promises to become one of the most flourishing places of its rank.

* A pood is forty pounds weight.

† A desættine is two hundred and ten Rhenish feet broad, and five hundred and sixty feet long, being 117,600 square feet.

However

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However thinly the town of Penfa is built, its situation on a height, watered by the Soura, and its numerous churches with their spires, give it a magnificent appearance. The inhabitants are evidently partial to commerce, which they prefer to every other kind of occupation. The shops are as well stocked here as at Mosco, which is not the case in other places. It may be presumed that the colonies on the banks of the Volga, and the sale of merchandize being promoted by travellers passing through this town, have contributed much to the increase of its trade.

The little rivulet of Penfa, which supplies a part of the town with water, falls into the Soura. The former, as well as the neighbouring lakes, abound with fish. All the small kinds of fish found in the Volga, are likewise caught here; among which the sharp-bellied bream, *Cyprinus cultratus*, is sometimes taken, but seldom of a large size. The silures and sterlets, a smaller species of sturgeon, are caught only in the spring, when the waters are at their greatest height. Jesses, *Cyprinus jesses*, as large as those of the Volga, are also caught here; and blay of different kinds, such as the *Cyprinus alburnus*, *ballerus*, *farenus*, and *vimba*. Neither lampreys nor the large kind of sturgeon

* * * As the author has frequently referred the reader to his former travels, first published in 1771; and as, without illustrative quotations from that publication, the present work would be imperfect with respect to information and perspicuity; it has been deemed essentially necessary to insert all those passages which relate to the description of particular places and countries, and to denote them by three asterisks. The title of the work before alluded to is: "Pallas's Physical Travels through different provinces of the Russian Empire, in the Years 1768 and 1769, in German, four vols. quarto, with plates." St. Petersburg, 1771.

are to be met with ; but trout is caught in some branches of the Soura, where it runs near mountains.

In the government of Penfa, there are numerous distilleries of spirits from malt, which belong to the land-holders ; a proof that there is a superabundance of corn. Many noblemen keep considerable studs. The land-holders have lately begun to dig for pyrites, which is very common in several parts of this country, especially on the banks of the Volga. In the villages of Kourbulak and Saviælski, the latter of which belongs to the government of Simbirsk, two manufactories of vitriol have recently been established.

The abundant pyrites found in this neighbourhood should induce government to establish several manufactories for the production of sulphur and vitriol, which might be obtained in great quantities to the benefit of the empire.

I could obtain no account of ores found in this government, excepting that in a few places, for instance, near the village of Lapukhofka, mines of iron have been discovered. Good mill-stones are quarried in different places contiguous to the village Permeyevo, near Sabacovo, on the opposite side of the Soura, and in the vicinity of Kimishk, a village built on the banks of the Oufa, and inhabited by the Mordvines.—Vol. i. pp. 74, 75.

Penfa is situated at a small distance from the left bank of the Soura ; between the rivulet Penfa, which unites with the Soura, and two other small rivulets, Shelakhovka and Moika, sometimes called Gusno-Moika, partly at the foot and partly on the North-East side of an eminence near the junction of

the Penfa and Shelakhovka. The eminence terminates in a precipice on the bank of the Penfa, and its perpendicular elevation is about fifteen or sixteen fathoms above the bed of this rivulet. It rises above the town, on the side of a ridge entirely covered with small oak and birch-trees, and presents fractured strata of a loamy and often tripolitan sand-stone, with which the inhabitants have begun to pave the streets; and which, when broken small on the road, form a solid pavement. The other strata of this eminence consist of clay or potter's earth, which, throughout the government of Penfa, is uniformly covered with a layer of the richest black mould, about two feet deep.

On the Northern side of the town, at the mouth of the Shelakhovka, there is a kind of new suburb, the building of which has lately been commenced, according to the plan adopted five years ago in Penfa. In this suburb wooden booths have been erected for the accommodation of dealers who attend the weekly market. The buildings in the town have been unremittingly continued since the imperial approbation of the plan above-mentioned. The principal street, and the great square on the eminence situated about ten fathoms above the level of the river Penfa, together with several other streets lying parallel with the former, have been marked out, and are already embellished with many beautiful houses: some of these are built of brick, in an elegant style of architecture. All the old houses that are to be demolished, must be rebuilt agreeably to the regulation, either of brick or wood; but, in the latter case, with a foundation laid of stone.—The best houses already erected are contiguous to the principal place, on which stand
the

the cathedral, and another church built of stone; the house of the governor; and opposite, but somewhat lower, two edifices appropriated to judicial proceedings; the house of the vice-governor, situated still lower on the side of the hill; the house of the commander in chief; a public school; and some dwelling-houses with shops. I observed a still greater number of shops in the principal street. Among the private houses in various parts of the town, those belonging to the families of Subof, and Tshemissof, and the dwelling of Mr. Peterfon, the apothecary, are the most conspicuous: the two last are adorned with beautiful gardens and hot-houses.

Of ecclesiastical buildings, I observed at Penfa a very ancient monastery with two churches of stone, and a nunnery with two churches. These structures are somewhat lower than the cathedral, which was built in the year 1717; besides these, there are four churches of stone and two of wood in the suburbs. The lower part of the town, on the opposite bank of the Penfa, consists of old and indifferent buildings, as it is not included in the new plan, and is intended to be gradually demolished. It is connected with the higher part of the town by a very decayed bridge; has a church of stone; and is commonly inundated in spring.

The streets of the old town, which, in conformity to the new plan, have been made more straight and convenient, are still very irregular, on account of the hilly nature of the soil; and are extremely unsafe for those who pass through in carriages drawn by horses unaccustomed to rough roads, insomuch that in the street leading towards the Penfa the wheels must be clogged, to prevent accidents. Yet this high situation is favourable

able to the enjoyment of free and salubrious air, as well as to the uninterrupted passage of dirty waters from the town; though it would be a great improvement to have aqueducts, or sewers, purposely formed round the town, to carry off the rain and snow-water from the hill above, instead of letting it flow through the streets.

Immediately below the mouth of the rivulet Penfa, a bridge is built over the river Soura, leading to the Simbirsk road, through the mountainous and woody district of Troitzk. Above the town and close to the Penfa, near a cavern formed by the rain, there begins one of the most ancient lines of demarkation, which has been gradually raised against the encroachments of the Tartars. It consists of a wall defended by a ditch, and extends from this place towards Vershnei, and Nishnè-Lomof, thence to Kerenk, and onward to Tambof.

This line of defence is carried downwards, along the right bank of the Soura, to the mouth of the Infa or Iffa, where it joins a similar and more ancient fortification, which has been erected from Simbirsk by the way of Yushansk; Tagai, Karfun, Ureën, Pogoreloi, and Argash, to Surk, and thence to Infara, Saransk, and Atemar.

Near the wall above-mentioned, where the road intersects it, and leads to Saratof, there is a very extensive botanic garden belonging to Mr. Peterfon, the apothecary; and on the opposite side are the brick-kilns established for the building of the town.

* * *

“About four or five versts from Simbirsk begins the line of defence made in the reign of the Great Tzar ALEXIS

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MIKHAÏLOVITCH, and which extends from the Soura to the Volga: it consists of a high wall strengthened by a deep intrenchment, and is a more remarkable fortification than that which extends from the Soura in a western direction. This line is still in a tolerable state of repair, though all the fortified places connected with it have almost uniformly lost their wooden barriers, and become open towns and villages." Vol. i. p. 82.

Trade and manufactures progressively increase, and begin to flourish at Penza. The Russian shopkeepers and mechanics have become more numerous, enterprising, and wealthy, since the nobility have made this town their residence. Besides the travelling dealers, there have also settled here several foreign merchants, who plentifully supply the town with every article of convenience and luxury. Most of the different species of refinement, together with public amusements, have already made their way hither. The resident noble families, and persons of rank who visit this town, have not only enlivened it, but even rendered its inhabitants sociable and polite. Among the noble visitors I shall mention principally His Highness Prince ALEXANDER BORISSOVITCH KURAKIN, who possesses considerable estates in this government, and now enjoys a philosophic retirement, at a period of life much too early for the fecundation of his talents. This assemblage of persons of rank has induced them to institute a private club, consisting of one hundred members, who meet every Saturday at a ball, in an elegant and spacious building erected on the principal place of the town. The disproportionately greater number of ladies
who

who visit this ball, is still more remarkable than at Mosco ; because many noblemen are absent from their families, and employed in civil and military posts. Perhaps the cruelties exercised in these countries during the rebellion of Pugatshof, have also contributed to diminish the number of male nobility.

The governments of Penfa, Nishnè-Novgorod, Simbirsk, and Saratof, are the true granaries of the Imperial capitals. It is only to be regretted that the greatest part of the inhabitants, and particularly the vassals of the nobility, consist of vagrants who came hither from all parts, and may be fairly classed with the most indolent and depraved peasantry of the empire. Nor have any effectual steps been taken to facilitate the exportation of grain, by the inland navigation of the Soura and Moksha, which might be easily improved, and likewise rendered subservient to the conveyance of timber for ship-building. A considerable proportion of the people who inhabit this government consists of Mordvines of the Mokshanic tribe, who chiefly live in the woody countries along the banks of the Moksha, and in the mountainous regions between the Soura and Volga. Indeed, if we may judge from the names of the rivers and brooks, which are mostly of Mordvinic derivation, the government of Penfa must have formerly been the principal settlement of that people.

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“ On the sandy banks of the Soura, the *Brassica oleracea*, or common white cabbage, grows in abundance. After passing this river, we entered the forest of the same name. Six versts from the Soura we crossed the Sourka, and about twelve versts farther the brook called Inara. Night overtook us in the

Mokshanic village Selikfa. The Mordvines who inhabit this country are successful in the management of bees, which are kept simply in the hollow trunks of trees, instead of hives, with only a slight covering during winter. They also rear a great number of cattle; but their sheep are of so inferior a kind that the wool seems to be mixed with goat's hair. Several real hermaphrodites * may be seen among them, both of ewes and rams. Many peasants employ themselves in making tar, as the country produces resinous trees in great abundance.

“ Beyond Selikfa we passed through swampy ground over the rivulet Otvel: eight versts farther we crossed the Trafimovka; and near Mikhaïlovka the rivulet Ischim, all of which empty themselves into the Soura. Here the country is more open and hilly; and a road leads hence to Simbirsk, partly over heaths; and as it extends considerably towards the South, I was induced to take a shorter, though in autumn, a more difficult way. On the other side of the rivulet Toma-leika, which joins the Ischim, we travelled through a hilly and marshy country overgrown with wood. At the close of day we arrived at a market-town situated on the rivulet Youlok. The heights of this country consist of a grey-coloured argillaceous stone, which, when heated, breaks into small pieces. It splits in the form of cubes and parallelograms. The town of Youlok-Gorodishtshé derives its name from an ancient Tartarian fortress in its vicinity called *Gorodok*. This village is chiefly built on the left bank of the brook. On the opposite side, bor-

* The author is rather obscure in this passage, and the German expression is *Zwitter*; but he probably alludes to mongrels.—*Transl.*

dering

dering on a swampy soil covered with old trunks of trees, there is a steep elevation which extends into a plain. Here a strong fortification, with a fosse, had been erected in the form of an irregular and angular semicircle. On the Eastern side it was closed and defended by an almost perpendicular precipice; the circumference of the whole being about three hundred and fifty fathoms. Several gateways leading to the fields still remain; but there is no trace of dwellings in the inner parts of the fortress. About the centre I observed a circular excavation, which probably has been used for watering cattle.

“ On the 22d of September we arrived at *Simbirsk*. The roads were so bad that it was impossible to travel by night; nor was it without difficulty that we could proceed in the daytime, though we had a double relay. We passed through small villages inhabited chiefly by Mokshanians, on both banks of the Soura. The prospect is terminated by hillocks which rise in the environs of that river, and the country abounds with wood. The heights almost generally extend in long ridges which, towards the West, present a pretty steep acclivity; while towards the East they form gradual slopes. They are uniformly composed of a grey-coloured argillaceous earth, or flint, in horizontal strata. The soil generally consists of loam or potter's clay: it is black in low situations, but frequently sandy on the eminences. The woods on the hills are interspersed with pine-trees; while those in the valleys and plains consist either entirely of oak, or of several umbrageous trees, of which the hard and soft linden-tree are the most common. The latter species is peculiarly favourable to the culture of bees in

that country. Besides, the linden-tree is of most general use in the rural economy of Russia, both on account of its wood, of which all sorts of furniture and domestic utensils are made, and its valuable inner rind of which cords and mats are manufactured. In those parts where numerous flocks of sheep are reared, the peasants dry a large quantity of linden sprigs with their foliage, which is an agreeable fodder for lambs in winter. Among these woods several plots have industriously been converted into meadows, though many acid herbs and the noxious hellebore grow there abundantly. The land near the villages is generally used for tillage. We found much hemp and grain, both standing and cut down, but buried under the snow and rotting there, between the 16th and 22d of September, excepting what had been collected in fine weather. The fields sown with winter-grain presented a prospect equally melancholy, as the rising blades had been devoured by a species of caterpillar, *Phalæna frumentalis*, which has within these few years become an almost general plague in the government of Kasan. The devastation was so considerable that the greater part of the springing corn was eaten to the root. The fields which were first sown had suffered most severely; but the latest sown, though interspersed among fields totally destroyed by the vermin, were uninjured, and in the most promising state of vegetation. The intervening damp and cold weather killed a great number of these pernicious insects, which usually conceal themselves beneath the soil during the day. The best preservative against these caterpillars would be, to overspread the fields plentifully with ashes, as soon as the corn begins to appear,

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especially

especially during moist weather. The ashes of wheat, buckwheat, or pea-straw, which are burnt as useless, would be excellent for this purpose.

“ The valleys which divide these heights are watered by rivulets that fall either separately or in conjunction with others into the Soura. Numerous villages are built along the banks of the following brooks: The first is the Youlok; then follow the Treleika, the Sirklei, and farther the small brooks Katmifs, Tthevarleika, Sadovka, Oferka, and Infa; then the Papoufa, a very considerable brook, the Bielaretshka, the Imbelovka, the Tshulim, the Touvarma, the little river Barish, and the brook Maïna. The Barish, after uniting with several of the before-mentioned rivulets, empties itself into the Soura. Here commences the chain of hillocks which accompany the Volga. The country is more open, and the woods around consist of birch-trees. The heights present, at different interstices, white slips entirely barren, formed of a cretaceous marl similar to that which is found in almost all the hillocks from Simbirsk along the Volga to the Oufa, and in the desert plain of this country. At a certain depth below the black mould there is a bed of argillaceous earth. This marl is by the natives called *Opoka*. They use it for whitening their stoves; and it would be excellent, if moderately employed, for ameliorating impoverished lands. In some places it is more clayey and of a greenish colour; in others generally more cretaceous or calcareous, and it is frequently composed of pure chalk, or testaceous lime, intermingled with calcined shells or belemnites. There are also sometimes discovered here, thin layers of white feld-spath.

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“ On approaching the Sviaga and Simbirsk, the only objects which present themselves are open, high steppes *, with obtuse hillocks. Among the plants which grow in the deserts near the banks of the Volga, the *Amygdalus nana*, or the dwarf almond-tree, is the most plentiful. This is one of the most pernicious shrubs to lands newly cleared, on account of the great difficulty attending its extirpation. Its fruit is called *Babovnick*, or walnuts of the Kalmuks, because it is small and rough. Some landed proprietors collect this fruit, and extract from it an oil which, though bitter, is very agreeable in salads. These almonds have the taste of peach kernels, and a spirituous liquor is also distilled from them.” Vol. i. pp. 78—82.

The whole population of the government of Penza amounted, in February 1793, to 136,282 immediate subjects of the crown, including 3794 Tartars; and 183,607 boors, or vassals of the nobility. In the district of Penza alone, are 18,727 boors of the latter description, and only 1063 immediate vassals of the crown: in that of Infara are computed to be 20,264 of the former, and only 7209 of the latter class: nay, the district of Moksha contains but 478 vassals of the crown, while those of

* This term does not properly denote low and watery places, or morasses, but dry, elevated, extensive, and for the most part uninhabited plains. Some of them being destitute of wood and water, are therefore uninhabitable; others have shrubs growing on them, and are watered by streams, at least have springs or wells, though they are void of inhabitants; yet in these nomadic people wander about with their herds and flocks, and thus make them, if not their constant, yet their summer residence. In many of them are seen villages. — See Mr. TOOKE’S “ *View of the Russian Empire*.” 1799. Vol. i. p. 81.

the nobility amount to 22,393. According to an accurate survey, the whole surface of this province is 3,289,231 desættines, each of which contains 2400 square roods : consequently, there are for every male head upwards of ten desættines, or 24,000 square roods of land. In so thin a state of population, the farmer can conveniently divide his ground into fallows ; whence he obtains, without manure, good crops from a soil which uniformly consists of a rich black loam, so that the produce even of ordinary crops is from five to seven-fold. The peasants of the nobility pay them an annual tribute of twenty rubles, a sum not easily raised. On account of this high impost, the boors, in a state of vassalage, are sold at the price of two hundred rubles each, together with the lands belonging to a village.

There is not the least doubt that the aforementioned black vegetable stratum of soil, which is upwards of two feet thick, originated from the forests that formerly covered these regions. This black earth is likewise found on all the hillocks and open fields, especially those with gentle elevations, which run in a northern direction. The traces of former oak-forests are obvious, partly from the brush-wood growing out of the parent roots, and partly from the numerous small hillocks covered with green turf. Nevertheless, there would be no reason to apprehend a scarcity of this or any other species of wood, if the indolent proprietors and their vassals could be induced to bestow some attention on the increase and preservation of that useful article, in the rural and domestic economy of man. This object might in some degree be attained, if a proper forest-police, as the allotment into annual falls, and the consequent re-planting and sowing

fowing could be introduced, at least on the domains belonging to the crown; a regulation which would be the more desirable, as the oak growing on the heights near the Soura is far preferable to that of Kafan, especially for ship-building, both on account of its solidity and durability.

But the unsettled laws of the government, with respect to the numerous distilleries of corn-spirits; the manufactories of pot-ash, glass, and iron; nay, even the claims of some parishes to the privilege of felling wood, have frustrated every attempt towards establishing better regulations. The Commissioners of the Admiralty, who select the timber for supplying the Imperial navy, and several thousand Tartars who are employed by them, and scattered through this government, particularly in the district of Saransk, are not in the least anxious to prevent the waste, or to cultivate new plantations. The Modvines, however, are more solicitous to preserve the forests in the countries they inhabit; because their veneration for old and beautiful oak-trees has continued, since the days of paganism. We were informed that in the forest of Moksha, which extends towards Muron, a considerable number of large oak-trees are to be met with, many of which are from two to three fathoms in circumference. It is to be regretted that the moist soil is not favourable to the production of valuable wood, inasmuch that no timber which grows there is fit for ship-building. — I learnt from an eye-witness, that in the district of Narosthat, near the Mordvinic village *Alkina*, among other oak-trees of a gigantic size, there is one of a most venerable appearance, whose hollow and broken trunk is several fathoms high, and thirty feet in circumference, but considerably larger near the ground;

ground; while its principal roots are of an extraordinary bulk, lying almost a yard thick, above the soil.

The timber felled for the Admiralty near the Soura is, during winter, transported to Penfa; seven versts below the town, at what is called the Kokushkinskaya-Pristan, it is put into barges, and thence at high water conveyed down the river Volga. But besides this, a number of straight, young oaks are wastefully cut down for implements of agriculture, domestic utensils, and fire-wood. Many promising trees are thus destroyed, or sawn into two planks, with an incredible loss of wood. I have frequently observed in the markets, some of these enormous planks, from four to five fathoms long, and from twelve to eighteen inches* in diameter, sold at the low price of half a ruble a-piece.

Next to the majestic oak, may be ranked the linden-tree, which in some parts of the province is very large. The abundant and excellent honey produced here, owes its superior quality to the blossoms of that useful tree. The *lipez*, or genuine linden-honey, is of a greenish colour, and of the most delicious flavour: it is taken from the hive immediately after the linden-tree has been in blossom.

There is likewise no scarcity of birch-trees. The oil obtained from their *degot*, or white rind, is not only used in tanning the well-known Russia leather, but is also beneficially employed as a vermifuge balsam in the cure of wounds. It is frequently brought to market at Penfa, whence it is sent to more distant places.

* The author says, from two to three spans in diameter.

The other species of wood growing in these regions, consist chiefly of umbrageous or broad-leaved trees, which are common in the northern parts of Russia. Needle-timber, that is, resinous-trees, or such as have acuminate leaves, are to be met with chiefly, and almost exclusively, in the sandy regions of this government, which lie at some distance from the Soua.

Wild fruit-trees are not indigenous here. The *Cerasus pumila*, or cherry-shrub of the Vistula, grows only on the southern deserts, on the borders of the government of Saratof, and in the district of Kerenik : hence the escutcheon peculiar to the latter is a couple of sprigs bearing cherries, in a silver field.

Of wild berries, the following kinds are to be found here : bramble-berries, rasp berries, black currants, cranberries, bilberries, wortle-berries, and three species of strawberries ; the large white strawberry of the wood, which is very common in the mountains of Ural ; and two species of field-strawberries, one of which ripens earlier in the season, while the other delights in a soil sheltered by old trunks of trees. — Very few rare plants are found in this government. The most remarkable, perhaps, are, the *Betulanana*, or dwarf-birch ; the *Daphne mezereum*, or spurge-olive ; and the mistletoe which grows on linden-trees, and is well known in the northern parts of Russia.

Fruit-trees, in general, do not thrive here in the open air, except the apple and black-cherry-tree : the pear, plum, and sweet-cherry-trees, must be carefully covered, as in Mosco, to preserve them from the rigour of winter.

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The river Soura arises in the mountainous regions, in the government of Saratof, at a short distance from the Volga, and in the vicinity of the village Sourka. It takes its course directly opposite to that of the Volga, flows two hundred and thirty-nine versts northward, through the middle of that government, and falls into the last-mentioned river, near the small town of Vasil-Surk. From Penfa, and even above that city, the Soura becomes a large navigable river, with a rapid current, and when at the highest water-mark, it inundates the country to a considerable extent. This inundation generally takes place about the middle of April, and usually continues three or four days. It often carries away its banks, and changes its course, which, together with the abrupt windings it frequently makes, and the trunks and branches of fallen trees, renders the navigation difficult and dangerous at low water. From Kerenskoi-Pristan, however, or about one hundred versts below Penfa, the passage on this river is more regular. But from Kokushkinskoi-Pristan, established seven versts below Penfa, and still more so from Surkskoi-Pristan, where barges are built, and which is contiguous to the city, the navigation is attended with danger, owing to the obstructions aforementioned, which might be removed at a small expence.

Notwithstanding these difficulties, there is a large quantity of grain, the abundant produce of the corn-distilleries, and timber for ship-building, annually conveyed down the Soura. Perhaps the salt obtained from the lakes of the Volga could be more advantageously carried down the Soura, than against the stream of the Volga to Nishnè-Novgorod, even with the addi-

tional expences of land-carriage from Saratof to the banks of the Soura. This mode of transporting the productions of the country was formerly attempted, by order of Count Shuvalof, in the reign of the Empress Elizabeth, when the salt-lakes were farmed out to individuals; but it has been relinquished in consequence of its having been misrepresented as unprofitable. The Soura is not navigable when the water is at the highest mark; because the true channel, and the islands and banks of that river, cannot then be distinguished; hence the conveyance of goods commences only when the water rises from five to six arshines* above its lowest current. The breadth of the river must be computed from its regular banks, or from the mouth of the rivulet Teshnär, whence empty barges are floated down to Penfa: here it is from ten to thirty fathoms broad, and from three to twenty-four fathoms deep.

Besides the Soura there are two other rivers, the Moksha and Vorona, which facilitate the carriage of commodities from this fertile province. The Moksha takes its rise in the district of Penfa, from a lake near the village Netshoëvka, where it is from two to ten arshines deep, and is intersected near its source with many dams erected for the supply of mills. It becomes navigable from the mouth of the Issa to the Okka, into which it flows, and where it is from ten to fifteen arshines deep, and from thirty to sixty fathoms broad. This river serves for the transportation of corn, spirits, pot-ash, the rind of the linden-tree, or *Lubya*, and mats, which are by this conveyance sent as far as Mosco and St. Petersburg.

* An arshine, or Russian yard, is twenty-eight inches long.

The Vorona likewise originates in this government, in the district of Verchney-Lomof, near the village Vedenäpina. It becomes navigable for small vessels, called *Budari*, near the extensive village Poima, belonging to Count Sheremetof. The inhabitants of this village are remarkable for their exemplary industry. Thence all the native species of grain are transported on the rivers Khoper and Don, to Tcherkask, the capital of the Kozaks, who inhabit the banks of the river Don; and again as far as Fort Rostov. If, at some future period, a free port were to be established in the straits of the Bosphorus, and thus a commercial intercourse opened between the sea of Azof and the Mediterranean, there is no doubt that the flax and hemp, so abundant in this part of Russia, could be exported at a reasonable price through this new channel.

All the smaller rivers above-mentioned, as well as the Volga, have their higher bank uniformly on the right side of their streams, while the left bank is flat, and presents an extensive low country, though the rivers run in the most irregular and opposite directions.

This facility of communication by water, the low price of the superabundant grain, and the stock of wood still preserved in some districts, have induced private individuals, as well as the Crown, to establish many important distilleries of corn-spirits, several glass-houses, and iron-founderies; and also manufactories of soap, pot-ash, and leather.

The principal of these distilleries are as follow:

In the district of *Krasnoslobodsk*:

1. The distillery belonging to the crown-domain Dvorzovye, called Troitzkoi-ostroshkoi, where, since the year 1767, one hundred

hundred and fifty labourers have been employed, who distil annually, in eighty stills, one hundred thousand barrels, or eimers * of corn-spirits.

2. In the Brilovskoi, which belongs to the Imperial College of Finances, from ninety stills, worked by one hundred and sixty men, are yearly distilled one hundred and ten thousand barrels.

3. A private distillery, consisting of twenty stills, which produces thirty thousand barrels.

In the district of *Insara* :

4. A distillery belonging to the family of Soltikof, and consisting of twenty-four stills worked by fifty-five men, yields seven thousand barrels of spirits.

In the district of *Moksha* :

5. A distillery in the village of Alexeëvka, the property of the Annikof family. Here the foreign construction of stills is adopted ; so that six thousand Tshetverts † of corn, in fifteen such stills, managed by forty men, produce annually thirty-three thousand barrels of spirits, and consume three thousand fathoms of wood.

6. A distillery belonging to the Ismailof-family, at *Kutlinskaya Sloboda*, where five stills and thirty workmen, from one thousand seven hundred tshetverts of corn, distil seven thousand six hundred and fifty barrels of spirits, and require one thousand five hundred and thirty fathoms of wood.

* The Russian *Eimer* contains six hundred and twenty-one French cubic inches ; the English gallon wine-measure, one hundred and ninety-one French cubic inches : consequently, the Russian Eimer is equal to *three gallons and one quart* of English wine-measure, and a fraction of three-fourths of a French cubic inch. — *Transl.*

† The Tshetvert, or quarter, contains two granitzas of eight inches six lines in diameter, and three inches four lines in depth.

7. A distillery in the village Snamenkoi belonging to Prince Dolgorukof, where two stills worked by twenty men, from four hundred thhetverts of corn, and five hundred and fifty fathoms of wood, produce one thousand six hundred eimers of spirits.

In the district of *Gorodishtshé* :

8 and 9. Two distilleries in the village Nishnaya-Shkaffta, the property of Count Shuvalof; one of twelve, the other of thirteen stills, which, being managed by fifty workmen, yield together fifty thousand eimers of spirits annually.

10 and 11. Two distilleries in the village Siromäs, belonging to the Kolokolzof-family, one of which is carried on in twelve stills, by fifty workmen, and produces eleven thousand barrels of corn-spirits; the other of five stills, is farmed out and worked by ten men, who distil upwards of four thousand eimers a-year.

12. A distillery near the village Petrovka, possessed by the family of Bachmetief; it consists of thirteens stills, and is worked by seventy men, who in some years distil above seven thousand eimers of spirits.

13 and 14. Two distilleries, formerly belonging to the family of Count Orlof; one in the village of Stolipina, the other in the neighbourhood of the village of Mamfa; they consist of thirty-five stills each, are worked by ninety men, and produce each upwards of ninety thousand eimers annually.

In the district of *Kerenfk* :

15. A distillery in the village of Nikolfskoi, or Kitta, on the estate of Count Tchernishef, contains thirty stills, by which
seventy-

seventy-two workmen distil about five thousand eimers of spirits from two thousand one hundred and thirty-five tshetverts of corn, and the fires employed in the distillation consume upwards of two thousand fathoms of wood.

16. A distillery near the village Polivanova, the property of the family of Vsevolodskoi, consisting of sixteen stills, which are worked by forty-five men, and produce yearly eight thousand one hundred and fifty-one eimers of spirits, at the expence of two thousand three hundred and seventy tshetverts of corn, and seven thousand fathoms of wood *.

On

* Although the author does not mention the particular kind of grain used in these distilleries, yet it is well known that rye is principally employed for that baneful purpose : nor does he describe the dimensions of the stills, nor the method adopted (No. 5.) from foreign distilleries. — To give the reader some idea of the extent of these distillations, and their pernicious effects, namely, the moral and physical depravation of the human character in Russia, I have been at some pains to make the following comparative statement.

The government of Penfa, according to our author, contains 323,683 males, and consequently, computing the female sex at an equal number, the population will amount to 647,366 persons. This calculation nearly agrees with that given by Captain Plescheëf, whose “ Survey of the Russian Empire” has been translated into English in 1792, and, according to whom, the population of the government of Penfa then consisted of 640,700 individuals. — Mr. Tooke, the ingenious author of the work already quoted on several occasions, states the whole population of Russia at present to amount to 36,000,000 ; so that the government of Penfa contains about the fifty-fifth part of the inhabitants of that empire. This being one of its most fertile provinces, it cannot be admitted as a just conclusion, that all the other governments distil an equal quantity of corn-spirits : for, in Penfa alone, the number of stills is three hundred and ninety-seven ; they employ nine hundred and eighty-two workmen, consume eighty-six thousand two hundred and seventy-nine tshetverts of corn, and ninety-six thousand three hundred and seventy-five fathoms of wood. The produce of the whole is five hundred and fifty-four thousand four hundred and one eimers of corn-spirits ;
and

On this occasion, I cannot avoid mentioning an interesting treatise published in 1792 at Mosco, in the Russian language, by Mr. Vassili Nicolævitch Subof, the present director of economical affairs in the government of Penfa. This gentleman, who possesses large distilleries in the district of Saratof, and has paid much attention to the subject, describes the means of increasing the quantity of spirits in distillation. He not only offers, as he had previously done in the newspapers, to admit pupils into his school for improving the art of distilling, but he likewise informs the public of the principles on which these improvements essentially depend. Thus he has, with the common apparatus, from a tshetvert of corn weighing nine pood, or three hundred and sixty Russian pounds, produced six eimers and a quarter of spirits; while others, from the same quantity of grain, could obtain only five eimers. This remarkable increase of the spirituous produce, the author principally attributes to the following circumstance: In order to reduce the temperature of the hot water used in the mash, he caused cold water and ice to be added, by which the evaporation of spirituous parts during fermentation was prevented. By this and some other practical advantages, which he promises to communicate without reserve to his pupils, he has brought this art to such perfection, that from ten pood, or four hundred Russian pounds, he uniformly obtains seven eimers and four-fifths of common proof spirits.

and calculating each eimer at thirteen quarts English wine-measure, it appears that Penfa alone distils annually, from wholesome grain, about two millions of gallons of LIQUID POISON. — *Translator.*

In the district of *Infara*, the following glass-houses are established.

1. On the rivulet *Patisha*, where common green glass vessels are manufactured, and for which two thousand pood of pot-ash are annually used.

2. A large glass-house, to which is attached a smaller one, situated near the village of *Petrovka*, belonging to the family of *Bachmetief*. Here white flint-glass is made in some perfection.

Besides the iron-works which are established in the small town of *Infara*, described in the first volume of my former Travels, I have met with three other forges, or smelting-works, in the district of *Krasnoslobodsk*, of which I had then no knowledge, though they had been erected many years. The first is called *Rapkinskoi*, and was erected in 1722, by *Taras Vassielevich Melakof*, an inhabitant of the village *Dedelova*. He also, in 1726, built the second, called *Siviskoi-Savod*. The third was built by his son, *Andrew Melakof*, in 1754, and is called *Avgorskoi-Savod*. *Rapkinskoi* now belongs to *Mr. Shopkin*, a merchant of *Vologda*; but the two last are the property of *M. Tshkantshikof*, a merchant of *Mosco*. The proprietors of these three iron-manufactories purchase the iron-ore, and the coal used in smelting, from the inhabitants of the neighbouring villages. The first is said to produce twenty-five thousand pood of pig-iron; the second ten thousand pood of indifferent bar-iron; and the third eighteen thousand pood of pig-iron.

After the government had relinquished the pot-ash manufactories, several private individuals established others on a smaller

smaller scale, of which I found four in the district of Infara. The first of these manufactories belongs to Counsellor Shedrinkoi who commenced it in 1780, in the village of Trefvatkoi, where six workmen employ seven hundred tchetverts of wood-ashes, from which they annually produce seven hundred pood of pot-ashes. The second, which is the property of Captain Nikonof, was established in 1783, in the village of Golovintchina, and yields the same quantity of pot-ash. The third was begun in 1778, near the rivulet Patisha, by a Lieutenant Koshin, and yields five hundred pood of pot-ash, from six hundred tchetverts of wood-ashes: here they employ six workmen, and make use of six kettles. In the fourth, which belongs to Assessor Yumatof, and was commenced in 1783, near the village Iffinskyé Malyé Polani, the same number of men and materials are employed, which afford a similar quantity of this useful manufacture.

There are likewise several cloth-manufactories lately established in the district of Infara; and I shall particularly mention six for making sail-cloth, which employ nearly three hundred workmen, and produce annually, upon one hundred and sixty-four looms, about two thousand pieces of cloth; the greatest part of which is sent to St. Petersburg, and thence exported. If the commercial intercourse by the Black Sea should become more extensive, there is little doubt but these manufactories will increase, as it would be more convenient and profitable to export their goods through the more contiguous channel of the Bosphorus. The manufactures of Russian leather, *Youghten*, and the soap manufactories of this government, are principally carried on in the town of Penza, and in the district of Saransk.

In the former place, five boilers annually produce upwards of twelve thousand pood of soap ; and in five leather manufactories nearly eight thousand hides are prepared. I dwell with complacency on these subjects, because I feel inexpressible pleasure in observing that, since my former travels, in the year 1768, the industrious disposition of the inhabitants of this country has in a remarkable degree increased.

The physical travels of the academicians, from the year 1768 to 1773, have very much contributed to disseminate philosophical knowledge, and to excite a spirit of inquiry into the Natural History of the Russian Empire. I was very much delighted to find several ingenious naturalists in Penza, particularly the College Counsellor Fedor Michailovitch Martynof, and Mr. Peterson the apothecary, who had collected a variety of the curious natural productions of this country. The most remarkable of these I shall attempt to describe, and subjoin some observations of my own.

Iron-ores, both of the ochre and laminated kind, are not only found near the iron-works before enumerated, but likewise on the estate of Kolokolzof near Penza, and beyond the Soura, about twenty-five versts above Penza, near the village Lapukhovka. Those of the latter place have been deemed worthy of being smelted, and the mineralogical college had granted permission to establish a smelting-work, which however has not been carried into effect.

A loamy sand-stone has been found on the banks of the rivulet Aiva, beyond the Soura. This quarry is near the village Kafarka, seven versts from Shkaffta, a distillery belonging to Count Shuvaloff.

Petrified

Petrified wood, of a filicious and sandy nature, with a beautifully variegated grey and whitish texture, but seldom so hard and white as that of Syzrane, is found here in horizontal strata; nay, what is extraordinary, in several places almost on the surface of the soil, particularly at Bessonovka, a beautiful estate situated below Penza, and belonging to the Soltikoff-family;—farther, in the vicinity of the village Vedenkoë, where it resembles the wood of the elm in texture, and is used for hones; and beyond the Soura, near the village Kafarka, in the district of Gorodishtshé.

The College-Counsellor Martynof has in his cabinet a jaw-bone, several grinders, a calcined ivory tooth, and a rib of an elephant, found under the surface of the soil, near the village Levino, fifty versts from Penza, and about five versts to the west of the great road. He also shewed me a piece of an elephant's tooth, which had been found in the brook Shuksha, that empties itself into the Soura, near the village Shakhmametova. This fragment appears to be part of a perfectly sound tooth; it is very crooked, and much furrowed on the outside.

These vestiges of a former deluge are discoverable in the uppermost sandy and loamy strata, which are frequently intermingled with cylindrical stones; and, in the deeper clayey layers, there are likewise found the remains of marine productions: even on the heights of Penza, in sinking a well at a considerable depth, instead of finding water, large quantities of oysters were discovered in a bed of clay. Muscles have been found in a complete state of preservation, in the banks of a small lake, near the village Trifimostshino, in the district of Gorodishtshé.

There

There are but few remarkable quadrupeds in the government of Penfa, which, on account of its superior cultivation, has scarcely any wild animals excepting those of the forest. The large otter, and the *Lutreola*, or small otter, which lives upon lobsters, are said to be very common in the Moksha and Soura. The latter, when caught alive, cannot be domesticated, and soon dies. The *Sorex moschatus*, or musk-rat, is found in the Soura, and in the brooks which fall into the Khoper. The large grey house-rat has not yet made its appearance in these regions.

A particular species, or mongrel variety, of the domestic cat, engaged a considerable share of my attention. It was the offspring of a black cat which belonged to Yegor Michailovitch Shedrinskoi, Counsellor of State, and had kitted three young ones that exactly resembled each other. Their mother lived alone in the village of Nikol'skoi, in the district of Infara, on this nobleman's estate, and often retired to a young forest, behind a garden which is laid out in the English style. The domestics had remarked that this cat was absent during the rutting season; and it was also reported that she formerly had kittens of the common kind, which she devoured a few days after their birth. I saw two of her brood in the house of Counsellor Martynof, and one in that of the Lord-lieutenant. The form of this cat, and particularly the nature and colour of the hair, exhibited so extraordinary an appearance, that I was induced to give a representation of it in the first plate. It is of a middle size, has somewhat smaller legs than the common cat, and the head is longer towards the nose. The tail is thrice the length of the head. The colour
of



of the body is a light chestnut brown like that of the pole-cat, but blacker on the back, especially towards the tail, and paler along the sides and belly. The throat is whiter, and the female has a white spot on the lower part of the neck. A black streak runs along the nose, surrounds the eyes, and ends in a point on the forehead. The ears, paws, and tail are quite black. The hair, like that of the pole-cat, is softer than of the common cat, and the lower or furry part is of a whitish grey. The hair of the tail is somewhat elastic, and lies flat in divisions. The exquisite olfactory sense, agility, and other characteristics of these three animals, are similar to those of the common cat. But they had been extremely wild at first, hid themselves in cellars, and holes, nay even burrowed under ground, and had not yet acquired the sociable qualities of our domesticated cats. I shall not attempt to determine whether they may be considered as a mongrel breed.

Of the winged tribe, there are in the government of Penza many wood and heath cocks, a great number of tame and wild ducks, and, in winter, innumerable flocks of small birds, which feed on seeds, particularly siskins and greenfinches, that swarm about the stacks and threshing-floors of villages. This multitude of birds is a strong inducement to bird-catchers to come hither even from Mosco; they catch many thousands of greenfinches, which are carried for sale to that city. These birds particularly abound in the village of Kurilovka, which belongs to the family of Mansurof. It is situated beyond the Soura, at the distance of nine versts from Penza, immediately behind the village Ternovka, which may be seen from that city.

The

The rivers of this government, as has been already observed, are abundantly provided with fish; but, except trout, there are none deserving of particular notice. Trout are caught in different rivulets, especially in the stony bed of the Vishnanga, which falls into the Oufa, near the village Vedeniskoe; and some upwards of two feet long are also taken in the brook Aiva, which falls into the Soura.

The province of Penfa cannot boast of many remains of antiquity, except a few old fortifications. In some places the plough accidentally turns up old battle-axes and pike-heads; one of the former was shown me; it had been found near the village Polänki, in the district of Tshembar, where the vestiges of an ancient fortification are still to be seen; it exactly resembles those which form part of the arms belonging to the town of Mokshan, as delineated on the first plate. I was informed that near the source of the Khoper, about three versts and a half from the village Kutchukpor, which is situated on the banks of the small rivulet Gorodok, there remains the foundation of a building surrounded by a wall. At this spot are found square bricks and stones of various sizes, and different weapons are occasionally dug up in its vicinity. A number of sepulchral hillocks of the Tartars surround this place, and the building itself has probably been a mosque attached to those cemeteries.—In other places we observed the ancient *tumuli* of the Mordvines, which are much smaller than those of the Tartars, and still venerated as the paternal relics of their ancestors.

Among the natural curiosities preserved in the cabinets of Penfa, I took notice of a stone of the bladder, which was one

inch and five lines Paris measure in its greatest diameter, and two inches eight lines long: it was of a soft, calcareous nature, and near the size and shape of an oblong sugar-pear. This stone was the more remarkable, as it had been spontaneously discharged by a girl sixteen years of age, who had long been afflicted with nephritic pains.

On the afternoon of the 9th of March, we left Penfa, with a grateful sense of the hospitality we had experienced in that town. The road at first led over hills thinly covered with old trunks of trees and brush-wood; we then proceeded for a few versts over plains intersected by branches of the rivulet Penfa; farther over a height to the brook Ordym, which falls into this rivulet, and progressively through a flat country with gentle elevations, till we arrived at the brook Kondaly, twenty-four versts from Penfa. Here we alighted in a village built on the banks of the brook, which is the joint property of the two noble families of Subof and Kisselef. The whole heath or steppe between this place and Penfa produces only insignificant dwarf-trees, wildly scattered, and unfit for timber. All the names of rivers and brooks that lie beyond the line of defence before described, are of Tartarian derivation, and the term *Kondaly*, which signifies the water of the beavers, is a proof of the former existence of that curious animal in these regions.

From Kondaly we travelled the whole night, twenty-two versts, mostly over gently-sloping fields or heaths, to Klyoutshik, near the brook Nanga, which joins the Oufa. In these and many other open regions, travellers are exposed to great danger in winter, on account of the drifts of snow that cover

the roads, and are pointed out by marks of brush-wood, or young trees. Thus the forests are unnecessarily wasted, instead of which such young trees might be planted along the road, and rendered subservient to another useful purpose. Besides, the scarcity of wood is more felt as we advance towards the South, insomuch that the peasants are obliged to live in the most wretched cabins, and as they pay very high taxes to their landlords, the major part of whom are noblemen, their poverty is inconceivable. Nevertheless, the boors throughout these countries keep a greater number of good horses and cattle, than those in other parts of Russia; because the extensive steppes afford good pasturage. They have likewise here a larger breed of geese, turkeys, and other kinds of poultry.

On the 10th, early in the morning, we proceeded fourteen versts on our journey to the village Tshunakino, built near a small brook joining the Tshardym, which empties itself into the Oufa. Here we found numbers of birch-trees, intermixed with oaks of an inferior growth, and various kinds of brush-wood. Although the Soura is seventy versts from this place, the boors are in general obliged to fetch their timber from the banks of that river.

During the whole of our journey through the fertile government of Penza, and as far as Saratof, we were accompanied by small flights of snow-hammers, which usually flew before the horses, boldly alighted on the road, and were particularly numerous about the corn-stacks. They probably remain in these regions during the whole winter. Our road now extended over elevated plains which were covered with birch, and separated the brooks that flow into the Soura from the Med-
veditza.

veditza. On descending from these elevations we arrived at the brook Krutetz, being the first that falls into the Medveditza. After we crossed the brook and travelled twenty-one versts, we entered the small district town of Petrofsk, built by Peter the Great during the Persian war. The river Medveditza runs through the middle of this town, which has nothing to boast of but the regularity of its streets. In the northern and lower part, it has three indifferent churches of wood: the southern part, on the opposite bank of the river, is partly built on an eminence, the summit of which was formerly occupied by a wooden fort. There are only eight decayed turrets remaining, and nine iron field-pieces with rotten carriages. In this curious fortification I could observe only a barrack in a ruinous state, a small church of stone, and adjoining it a vault, for the military chest and archives. Two small churches of stone are built beyond the limits of the fort, and at the extremity of it, in a field, there is a wooden cloister, which also has a church. On the southern side there is a deep fosse, which runs beside the Medveditza to Atkarsk, in a western direction from the Volga. A straight road leads from Petrofsk through Atkarsk over a common to Kamyshenka.

Near Petrofsk we crossed the little brook Stepnucha; and travelled over open, elevated steppes, diversified with little hills and vallies, but almost destitute of wood, for twenty-five versts to Mokroi. On account of the deep snow, the road thither was extremely difficult, and as a storm with a fall of snow came on, we were obliged to remain here all night.

On the 11th we crossed the brook Mokraya, after descending a very steep precipice: on this occasion one of our carriages was

overfet, but without any material injury. Two verfts and a half from the village the country riles into mountains, divided by deep glens, covered with a confiderable quantity and variety of wood, fuch as oak, birch, aspen, the linden-tree, and a diverfity of underwood. The brook Kutfhugur * has its fource among thefe mountains. It flows into the Tfhardym, which difcharges itfelf into the Volga. A deep glen renders this road rather difficult, as it proceeds along the declivity of a confiderable height. Two verfts and a half farther we reached the Mordvinic village Orkino, fituated in a deep valley, through which the brook Yelfhanka flows into the Kutfhugur. The hillocks and dales gradually grow fmaller, and are almoft without wood.

About eleven verfts from Mokroi, we paffed over an extenfive dale, and croffed the brook Sokura, which joins the Tfhardym; we then proceeded over high ground to the brook Burlovina; and again over feveral heights to the Sokura: the whole ftage amounted to twenty-two verfts, when we arrived at the large village Golitzyn, which is called after the prince of that name. It has a church, and is inhabited by about one hundred Ruffian families, and fix hundred Malo-Ruffians who have gradually joined the former. Thefe colonifts, who voluntarily fettled here, became tributary to the land-holder, and earn their livelihood chiefly as carriers. Their dwellings are more cleanly than thofe in the villages through which we had paffed; and though they are fmall and made of clay, yet they are conveniently built,

* *Kutfhuguri* is a term derived from the language of the Tartars, and generally applied to fuch hillocks as have a fteep afcent, and are covered with brush-wood. — *Author.*

being furnished with chimneys, and the walls whitewashed within and without. These villagers are good-natured, rather opulent, and possess numerous herds of cattle, of the Ukranian breed, generally marked with variegated spots; they likewise have flocks of Tsherkeffian sheep with long tails, excellent poultry of all kinds, and spirited horses. The soil of this country is black and rich, inasmuch that, in sinking wells, it has generally been found to consist of a vegetable stratum not less than a fathom thick.

Near Petroffk, where the country gradually becomes lower towards the South, we observed a greater number of the southern vegetable productions, which do not thrive in the colder government of Penza. Of this nature are the dwarf cherry-tree of the Vistula, the hawthorn, and the wild dwarf almond-tree; and we here again met with tulips. Two German colonies are established in this fertile province, to the right of the Sokura, in Yagodnaya-Poläna and Pobotshna; — at a great distance from their countrymen, who have settled on the banks of the Volga.

After passing over the Sokura, we met with considerable heights, which abound with wood, and divide the brooks of the Tshardym from those of the Kurdyum. Here our curiosity was gratified by the new and uncommon appearance of the trees, of which we had received an imperfect idea in the former part of our journey. The cause of this singular phenomenon is as follows. Severe hoar-frosts had commenced in these regions before Christmas; and were followed by snow, mixed with rain, or sleet, so that even the smallest branches of the trees were covered with ice an inch thick: by this all the flexible

birch-trees had been bent to the ground in semicircles. Their tops and branches were thus buried under the continual snow, which lay upwards of a yard deep, and kept the trees in that recumbent state. The inflexible full-grown birch and oak trees had been partly split, and partly broken, by the weight of the congelations on their tops, while their collateral branches were also bent to the ground. The thaw, which began here towards the latter end of February, and the rays of the sun, had indeed melted the icy incrustations on the upper part of the trees, but it still remained undissolved, on the branches which were fixed in the snow. The cylinders of ice, on one side, all appeared melted into a solid mass, but on the lower part they were crystallised, some according to the usual configuration of frozen water, in hexagonal and partly in rhomboidal figures, while others consisted only of hexagonal sections. These bodies were, like the well-known hollow cubes of salt, apparently formed of icicles of a pyramidal figure when inverted, broad on the surface, and narrow towards the inner part, where they were fixed in the ice. To afford the reader a more distinct idea of this remarkable phenomenon, I have given a representation of a part of the forest in this situation, on the second Vignette, which he will find at the conclusion of this section. I also learnt, that a similar phenomenon was observed in many woody regions below Saratof.

From these high woodlands the road leads downwards to the brook Lopshinovka, on the banks of which several small villages are built; and a short distance farther, after a stage of twenty-one versts, we reached the village Khlebnovka, situated on a little brook which was completely cleared of ice. This
brook

brook receives from the neighbouring vallies, several springs, that never freeze, and it flows towards the Kurdyum, in a southern direction, through so warm a dale that the snow was partly melted, and the frost had left the ground. This sudden change of temperature was distinctly perceptible by the mild breeze which came from the valley, on a day when the cold had before amounted to seven degrees of Reaumur. Wild ducks had already made their appearance in this place. But scarcely had we ascended the gently-rising and lofty heights on the opposite side of the brook, which form the steppe extending fifteen versts to the stage Kurdyum, and eighteen versts towards Saratof, when we again found winter in its severe form. So much does the particular situation of countries contribute to the local varieties of climate.

The town of Saratof, where we arrived on the 12th of March, has increased much in trade and population, and consequently in regular buildings, since the establishment of viceroyalties, or provincial governments. This is the only town in Russia where I have found the necessaries of life at nearly the same moderate prices as they were in the year 1773. It is remarkable, that in general, in all the places situate below Kasan, on the banks of the Volga, the city of Astrakhan excepted, the prices of provisions have not been considerably raised; because necessaries are produced there in the greatest abundance; and luxuries are not yet held in estimation. Even Astrakhan, and several distant towns, are partly supplied with grain from this neighbourhood; a supply to which the German colonists greatly contribute. These colonists have, during the last twenty years, considerably increased, both in population and opulence, and
are

are now almost completely naturalized, or renovated ; as the old settlers, who were in general rather immoral characters, are dead, and succeeded by a better and more vigorous progeny. The number of colonists who settled on the banks of the Volga, originally amounted to twenty-nine thousand persons ; two thousand of these gradually emigrated to different parts of the empire ; about four hundred were carried into captivity by the Kirghiskozaks during the troubles of 1773 ; nevertheless the present population of the German colonies on the Volga amounts to thirty-three thousand persons of both sexes. They appear to be perfectly contented and happy, and to have no other wish than to be governed by magistrates acquainted with the German language, as many of the colonists are unable to speak the Russian. Nor would it have been an easy matter to choose a better and more comfortable situation for such a colony in the Russian empire ; not only with respect to fertility, but also for a healthy and temperate climate. The winter is regular and moderate, with deep falls of snow ; the weather of spring and autumn is generally wholesome, and the summer is delightful. The various degrees of heat and cold here do not exceed twenty-seven degrees above and below the freezing point, and even these do not occur to such extent every year. According to the observations of the Aulic Counsellor, Dr. Meyer, the average heat for the whole summer of 1792 was not entirely fifteen degrees ; and the medium for the whole winter amounted to five degrees and five-eighths of heat. In such a temperature all kinds of fruit thrive exceedingly well. Hence the Doctor was induced to establish a nursery of several thousand fruit-trees reared from the seed, on a farm called Khutor, about
twenty-

twenty-five versts from Saratof. In order to ingraft with proper sprigs, he procured them from the orchard at Herrenhausen, belonging to the Elector of Hanover. They were sent to him by the mail, and consisted of the following assortment: ten species of the best apples, fifteen species of pears, eight of cherries, six of plums, and several of peaches and apricots, all of which arrived safe in Russia. They were ingrafted the following summer; and I had the satisfaction to learn by letter, that these fruit-trees are in a very flourishing state. I have no doubt that the mulberry-tree would likewise thrive well in all the colonies established below Saratof, if the planters were encouraged to rear it, by supplying them with seeds for nurseries: but, at the same time, it would be necessary to distribute among them concise printed directions relative to the cultivation of the silk-worm, and that the respective clergy should contribute their share towards introducing and recommending this profitable branch of domestic economy.

I was in hopes of hailing the approach of spring at Saratof; but, contrary to my expectation, I found the ground covered with deep snow, and the frost, which had succeeded the mild weather of February, was of such intensity and continuance, that I was obliged to avail myself of the usual winter-road with our covered sledges. We staid only two days at Saratof, and on the 14th of March, continued our journey down to Tzaritzin, on the icy pavement of the Volga, which was nearly a yard thick.

The winter-road to Sinenki, forty versts in extent, is made for the most part on the mountainous right bank, or *Nagornoi-Bereg*, partly on the river itself, and partly on its branches.

At the mouth of the rivulet Treftshikha we found a relay in readiness for our conveyance : we slept at Sinenki, a place the population of which has increased to the number of nine hundred persons, by new settlers from the districts of Lomof, Naroftshat, and other parts. From such colonial establishments the government of Saratof* has, during the last ten years, received new accessions of population ; in consequence of which several villages have been built in various parts, especially since the common land has, by a more equal distribution, been divided in proportion to the number of inhabitants in the different districts.

On the 15th we proceeded in the morning, along the Volga for seven versts, to the German colony Sosnovka. Since the last thaw had rendered the ice of the river rather unsafe, the post-road had been made on a more solid bottom, through the foreign colonies. The inhabitants of Sosnovka are of the Lutheran persuasion ; they have, at their own expence, built a small church, and propose to appoint, conjointly with the congregation at Talovka, a common pastor selected from the sect of Moravian brethren, to whom they had sent the vocation. It appears in general, that most of the German colonies on the banks of the Volga will gradually embrace the principles of that persuasion ; and that the profits arising to the colonies at Sarepta from the spinning of cotton, have contributed to effect this religious change. The colony of Talovka at present

* According to the new division of the Russian Empire into vice-royalties, or governments, that of Saratof was composed of part of the old governments of Kasan and Astrakhan, and particularly of the provinces of Simbirsk, Pensa, and Tambof. — *Author.*

consists of ninety-two families; it lies in a low and extensive valley, watered by the Sofnovka, which flows between stratified mountains, and empties itself into the Volga. The sloping elevations which encircle the valley, are intersected with irregular winding dells, overhung with clumps of dwarf-elms, oaks, and willows.

We found it extremely difficult to proceed, for three or four versts, in the higher part of the dale; as the deep snow had been drifted into the narrow tracks of the road. Thence we passed over a common perfectly level, covered with deep snow, presenting here and there the tops of bushes, and extending for ten versts, almost to the verge of the colony called Talovka. This colony is on the banks of the shallow Karamysh which runs entirely through a level country, and here shews the difference between the current of the Volga and the Don. We arrived at the Karamysh, about seven versts from Talovka; it is a gently-gliding brook, which, after joining the Medveditza, falls into the river Don. We now travelled in the direction of the Volga, which flows under a steep and high bank, for upwards of three versts, through a gradually-declining valley. — Sofnovka consists of eighty families, who have, at their own expence, built a small church of wood.

In these as well as the other colonies on the Karamysh, and in some of the lower settlements along the Ilovla, the want of fuel, previous to the year 1788, had been severely felt. Since that time the inhabitants have learnt to make an artificial peat, composed of dung and straw. This invention was suggested to them by Frederic Rish, a native of the turfy island of Rugen, in the Baltic Sea, and now a colonist of Ust-Salikha. The colonists can spare their dung for that purpose, as the loose

black foil requires only to be divided into fallows, to restore its fertility ; and they have a superabundance of straw. The dung is gathered in heaps, and left to putrify during winter. After the first agricultural labours of the spring are finished, this compost is carried to the water-side, placed several feet deep, on a dry spot, mixed with a proportionate quantity of straw, and then trampled upon by horses and oxen, till it form a compact mass. When it is half dried in the open air, it is cut like turf into square pieces, which are piled up till they are completely dried, and afterwards carried home, where they serve as a stock of fuel for the winter. This artificial turf has long been used by the Crim-Tartars ; it burns with a flame not unlike sea-coal, and imparts excellent heat, particularly to stoves and ovens for baking. Its smoke, however, is offensive, and is with much difficulty excluded from the inner apartments. Five or six pieces of it are sufficient to heat an oven ; and a few men, with several pair of horses or oxen, are able to prepare, in the course of a week, sufficient fuel for the whole winter. Without this expedient, most of the colonies would be reduced to the greatest distress for want of firing ; inasmuch as they have most injudiciously cut down and destroyed the small quantity of wood, which they found on the lands at their first settling, without ever thinking of future exigencies. They would now be very willing to plant rows of the willow and poplar on their low grounds, if they could obtain permission to fetch slips of those trees from the islands of the Volga.

We proceeded from Talovka ten versts to Bobrovka, a Russian village on the mouth of the brook of that name, which there supplies a mill with water, and then falls into the Karamysh.

Ten

Ten versts farther we came to the colony of Uft-Salikha, a settlement attached to the tenets of Calvin, and commonly called *Messer's Colony*, after one of the oldest settlers. The German planters generally denominate their establishments after their elders, or first overseers. This colony is composed chiefly of emigrants from the Palatinate, the principality of Ysenburg, and the adjacent German states.—The whole country through which we travelled along the Karamysh, consists of high, though almost level steppes, and the brook itself is shallow.

Ten versts farther we reached the colony of Lyefnoi Karamysh, or Grim, where a few elm and alder-trees are still left on the banks of the brook, but which are insufficient to supply one hundred and sixty-four families with fuel. Towards the East, on the left of our road, about thirty versts from the Volga, the steppe rises in gentle elevations. Here, at a few versts distance from Grim, the rivulet Lyefnoi Karamysh, is formed by two small brooks which flow from the East and South, and a third which meets them from the West, near the settlement; hence the German colonists call that rivulet *Dreysspitz*, or the tripedal point: these heights become more lofty towards the colony called Rossoskhi. Near this place, at the distance of a few versts from Lyefnoi Karamysh, is the eastern source of the Ilovla, called *Rossoskhi*, or original springs; because this rivulet is formed by the confluence of several small streams, which descend from the heights aforementioned. Here it glides near the colony, amid a beautiful dale, and afterwards unites in a deep dell with the principal branch of the Ilovla, which almost in a line issues from an eminence in a North-

North-west direction, and in its descent supplies a mill with water.

The colony of Rossoskhi is ten versts from our last stage, and was formerly called the French settlement. It has lost much of its pristine and picturesque wildness; the first settlers were a vagrant set of people, unworthy of so beautiful a situation; for they cut down almost all the bushes, and converted the high grounds into arable land. The French colonists, however, have for the most part been permitted to emigrate to other provinces of Russia, and are now succeeded by the more industrious Germans, who were selected from different settlements. Nevertheless, there are many houses here uninhabited, and several of them in a very ruinous state. The whole colony amounts to thirty-three families, including only four of French and Valonic extraction.

From this place, after ascending a very considerable height, we travelled along the banks of the Ilovla, downward to the brook Yelshanka, a distance of five versts. The colony of the Hussars, whose present state is not the most promising, is situated on this brook. Somewhat farther, on our right, we descried the colony of Kopenka, or Vollmar; and ten versts farther from Rossoskhi, we arrived at the Roman Catholic colony of Kamenka. This place is the residence of a priest, who is the pastor of fourteen colonies of that persuasion, established on the right bank of the Volga. Kamenka is one of the most flourishing and opulent among the Catholic colonies; it possesses upwards of sixty fire-places; and has, besides the brook, excellent water in wells, sunk through loam and other

other strata, about nine feet deep. We reposed here during the night, having suffered much inconvenience the preceding day, from the intensity of the heat, occasioned by the reflection of the sun-beams from the snow, accompanied with a keen north-west wind, which continued during the whole of our journey from Saratof. The Volga is not more than fifteen versts distant, in a straight line from this place.

On the 16th we arrived at the Roman Catholic colony of Panovka, which consists of thirty-six farms, and has only the artificial compost before described for fuel. Near this place we saw another colony, called Ilovla, which, like the former, is not in the most promising state. Indeed, it is remarkable that, here as well as in Germany, the Roman Catholic religion is attended with an unfavourable effect on the industry and prosperity of the inhabitants. At a short distance from Panovka, we came to Ust-Gräsnukha; a colony of sixty-four families, provided with a mill, and fifteen versts distant from that of Kamenka. On this road, before we had passed Ilovla, we could see the extensive colony of Karaulnoi Buyerak, which presented a beautiful prospect.

As Ust-Gräsnukha is the last colony on the road to Kamyshenka, and as the distance between those places is forty-five versts, a regulation has been made, that the colonies situated in a lateral direction must furnish travellers with horses on the stage, which is twenty-five versts from the former, and twenty versts from the latter place. But though we had sent notice to that effect, no relay appeared; and as our horses were too much fatigued to proceed over the mountainous track of country towards Kamyshenka, we were obliged to visit Protopopovka,

popovka, a mill and country-house belonging to a venerable old gentleman, Lieutenant-colonel Pafor, who lives here in philosophic retirement, and who received us with every mark of hospitality. This rural abode is situated on an eastern creek of the rivulet Ilovla, in a beautiful plain, surrounded with sloping hills richly covered with wood. The country along the Ilovla is more mountainous behind Gräsnukha; but we travelled for the most part through extensive fens. About half way on our stage we passed a mill, and a beautiful orchard, erected and planted by the above-mentioned old gentleman, and sold to one of the colonists. The incurvation of the Ilovla on which the post-house is situated, is remarkable on account of the sepulchral hill which contains the remains of the unfortunate astronomer Lowitz*; but the wooden cross erected on its top is decayed.

On the 17th in the morning we proceeded with the new relay, which had arrived during the night, to Kamyshenka, or as it is now called, Kamyshin. We ascended a considerable and irregular height, after which we came to the low Krutoi Buyerak and the brook Krutish, where several inhabitants of Kamyshenka have farms and gardens, and which clearly

* M. Lowitz lost his life in a deplorable manner, during the rebellion in Russia, while the rebels were ravaging the colonies of the evangelical brethren. Our naturalist was taken at Dobrinka, where he thought himself in perfect security; and dragged by a ferocious banditti to the head-quarters of their chief, on the banks of the Ilovla, where, in August 1774, he was impaled alive, and afterwards hanged. The companions and assistants of Lowitz, Ichonodzof and his son, effected their escape, carrying with them all his writings, and a part of his instruments. Several interesting particulars respecting this learned traveller may be seen in *Büsching's Wöchentliche Nachrichten*, 1775, p. 56 & foll.

demonstrates

demonstrates the considerable difference between the level of the Ilovla that falls into the river Don, and the deep Volga. We travelled over another height, crossed the brook Kamyshenka, and advanced to the town and fortress of that name, where we arrived at noon, and reposed the following night.

On the 18th we proceeded with a continued north-west wind and severe frost, which was the more favourable, as it enabled us to travel with more expedition along the ice of the Volga. This circumstance at the same time afforded me the pleasure of examining the whole diameter of the high stratified hills which extend along the intersected right bank of the Volga, down to Tzaritzin. This bank is formed of precipices, rising from five to ten fathoms above the level of the current; it has a sloping declivity towards the base, from ten to twenty fathoms in breadth, and from six to nine feet perpendicular height: this declivity is overgrown with stunted white poplar and willow-trees, and is entirely inundated by the stream at high water. The steep bank almost in every direction exhibits frequent breaches, and in different places channels of different sizes, which extend to various distances into the land, and conduct springs, rain, and snow-water into the river. These channels sink deeper every year, because the floods wash away the soft strata. On the sloping edges of these brooks, and on the soil projecting over the bank of the river, there generally grows a kind of dwarf or low wood, small elms, and other umbrageous species of trees, but the lower sides of the cliffs are overhung with black and white poplar trees and willows. The principal part of this stratified bank consists of a yellowish sand, in layers of different thickness, which are either in part or

entirely petrified, in some places frangible, and in others intermixed with a great variety of muscle and other shells. According to this general description, I shall endeavour to give the philosophic reader a more particular account of this bank.

After passing the Kamyshenka, which issues from a wide and steep glen, two versts farther we arrived at the first, which is called the white glen, or *Buyerak Belinkoi*. The bank toward this place is from five to eight fathoms high, as it were precipitately torn down, and formed of white irregular strata of stone, which are frequently a yard, and in some places upwards of a fathom thick, and occasionally present obscure traces of petrification. A few versts farther, we came to the second gulph, called *Phtoroi Buyerak*; after travelling another verst, we passed the *Lovetzkoi Buyerak*; a verst farther, we came to the fourth, or *Tchetvertoi Buyerak*, and at length to a small collateral gulph.—For some distance the stratified ridge rises boldly; then it gently and almost imperceptibly declines with all its strata, running for a considerable space of an equal thickness; it again becomes lower, so that eight versts from Kamyshin, near the *Verzhnaya Sestrenka*, it gradually declines to the level of the river.—From this place to *Nishnaya Sestrenka* the bank is scarcely two fathoms high; it then begins to rise a little, and presents at different intervals a few strata of white stone.

The ice of the Volga was in several places dangerous, on account of the fissures we discovered, partly in the middle of this river, and partly near its banks. About ten versts from Kamyshenka we passed a small cavern, and soon afterwards an uneven, furcated hill, called *Shishkin Bugor*, forming a bank from
fix

six to ten fathoms high. This precipice presents similar strata of white stone; but particularly near its base, where they are thinner and somewhat interrupted or confined, and marked with occasional impressions of muscle-shells. On the southern side of the hill, the strata of sand are soft, and perforated by swallows; but on the verge of the bank, close to the river at low water, there are a great number of large fragments, of an oval form, sometimes two arshines high, and full of impressions of bivalve muscles. These are masses, petrified by the accumulation of lime deposited in a bed of sand, and split by the frost, partly in lamina and in a transverse direction, after they have been washed up by the water. — The southern side of the hill extends to a great distance, and reaches to the Shirokoi Buyerak, or the broad glen, which opens itself fifteen versts from Kamyshin: below this follows a still lower and indented bank, and near it rises the Kosie Bugor, or the goat's hill, on the steep base of which we observed a number of broken layers. This hill terminates at the Kosie Buyerak, or goat's cave, and thence to the lower Kosie Buyerak there is only a low bank without any visible strata, because the eminences gradually withdraw from the river.

After having passed those glens, we arrived at what is called the *Antipofskoi Urotshishtshé*, where high strata of sand, with petrified masses of clay, lie mingled as far as the edge of the rivulet, and the glen *Antipovka*. Among these, especially in the vicinity of Antipovka, we observed large conglomerate masses, intermixed with shells filled with sandy matter, in a calcined state, and almost consumed. Here we found the common large crisped muscles, some bucardites, many tellenites,

a multitude of turbinates of the large kind, and especially whole strata, full of small striped turbinates of one size and species, as well as single volutites, entalites, and pieces of bone. In short, all these marine shells are not the produce of the Caspian Sea, but have probably been deposited here by the deluge. We likewise found here consolidated bodies of coarse quartz-sand, and the inner part appeared to be a solid mass of quartz.— On this part of the bank, as far as Bolyklea, criminals are employed in cutting square stones, which are thence transported to Astrakhan and other places, for the buildings of the Crown.

We were benighted at *Antipovka*. This place and the other establishments were formerly inhabited by the Kozaks of Dubofsk, or Kozaks of the Volga, who, within the last fifteen years, have been sent to the new colonial line of the Caucasus: they are replaced chiefly by voluntary new settlers, who continually increase, so that several new villages have been built along the banks of the Volga. The boors that have mostly re-peopled these villages, came hither from the governments of Penza, Tambov, Voronetch, Kasan, Mosco, Simbirsk, and other provinces.

On the 19th, with the dawn of day, we continued our journey along the Volga. Near Antipovka there is a glen called *Yaishnoë*, or the oval glen, which probably has received its name from the oval shape of the hill in its vicinity. Seven versts from Antipovka we met with a very large glen, which, like most others, is termed *Wodänofskoi*, and from which the neighbouring villagers fetch a beautiful, white, calcareous marl, for whitewashing their dwelling houses and ovens.

ovens. Two versts farther we passed two glens called *Rubeshnye*, because they constitute the boundary between Antipovka and Karavaina. Near these glens begins the large island *Gussinoe*, or the isle of geese, formed by the Volga, and extending beyond Karavaina. Here we observed the thick stratum of sand on the bank, partly in a perpendicular precipice, with intermingled strata of stone, partly covered with a green turf, and thinly scattered trees. Thirteen versts farther, near the Vodänofskoi Karavainoi Buyerak, on the verge of the river, we again discovered numerous globular bodies of an iron-brown colour, similar to a loaf of coarse rye-bread, by the Russians called Karavai: and from this circumstance the surrounding country is called *Urotshishtshe*. These masses project above the level of the river, and arise from a ferruginous stratum of sand, the softer parts of which are washed away by the current, so that it leaves on the bank, as well as in the glens, broken layers of a rusty colour, and firmly petrified by the crystallizations of iron*.

A little higher in the Volga, there begins another island called *Bolshoi*, or the great isle, which extends farther than Karavainoë, a colony evacuated by the Kozaks, and repopled by settlers amounting to six hundred persons. The distance

* On the Dutch and English coasts, I have observed on the substances ejected by the tide, two different means of petrification operating at the bottom of the sea, besides the silicious sulphat which is doubtless constantly produced there: first, the iron of ships' nails and anchors dropt into the sea, which, by means of the rust, sometimes cements great masses of shells, sand, and cylindrical stones; and secondly, a petrified clay, of a dark blue colour, whose medium of combination appears to be hydrogen, or the inflammable principle.—*Author*.

between these places and the river Ilovla is computed at forty versts. After we had passed two small glens called *Balki*, which lie behind Karavainoë, and a moderately high sand-bank, covered with broken layers, full of crisped and other shells, we observed, near the Vatashnoi Buyerak, or fisherman's cave, that the stratum of sand was apparently mixed with layers of clay and stone, rising very high, so as to form a precipitous hill, termed by the peasants *Rafin Bugor*, or the hill of Rafin. This elevation declines to a level towards the land, on which side there is a fortification said to have been built by a captain of banditti, whose name was Rafin. Here we lost sight of the petrified layers, and the hill again declines near Dutkina Balka, whence the bank continues moderately high, and is interrupted by three glens. But near Sheltukhin Buyerak, there again begins a high sand-bank, which in some places presents large masses of stone. Amused by this variety of objects, we arrived at the colony Bolyklea, which now consists of six hundred and thirty persons, who have recently settled there. This colony is abundantly supplied with excellent wood from the opposite island, and the low country adjacent.

Beyond the inlet on the verge of which Bolyklea is situated, a low bank of sand rises and extends to the glen Suvet, in which some of the remaining, particularly the disbanded Kozaks of the Volga, have erected cottages close to each other, and live by gardening, agriculture, and fishing. Here the sandy stratum again forms a hill, and exhibits petrified masses, till at length it terminates in a slope of a reddish iron colour, in the vicinity of a small glen.

Two versts from Bolyklea the bank of the river consists of sandy strata, which are yellowish at the base; and somewhat higher there is a steep stratum of white sand, increasing gradually towards the South, and above nine feet thick: this is covered first with an orange-coloured, and above it a grey, stratum of sand. After extending some versts, these strata insensibly decline to the edge of the water, and are succeeded by a high bank of whitish sand, which reaches to a dell, where a low point of land protrudes, behind which high strata of sand again rise, and extend to Proleika.

As the Volga, in this place, appeared to be rather dangerous for travellers, on account of the large fissures in the ice, in which ducks had already made their appearance, we resolved to attempt a new road over the heights of the country. But we had scarcely advanced a verst, when the snow, that lay a yard deep, obliged us to desist, and night approaching compelled us to seek for shelter in the wretched habitations of the new settlers at Proleika. This village, notwithstanding its extreme poverty, is remarkably populous; it has an extensive and beautiful tract of arable land on both sides of the valley, along which the houses are built at some distance from each other. The inhabitants are but scantily supplied with wood.

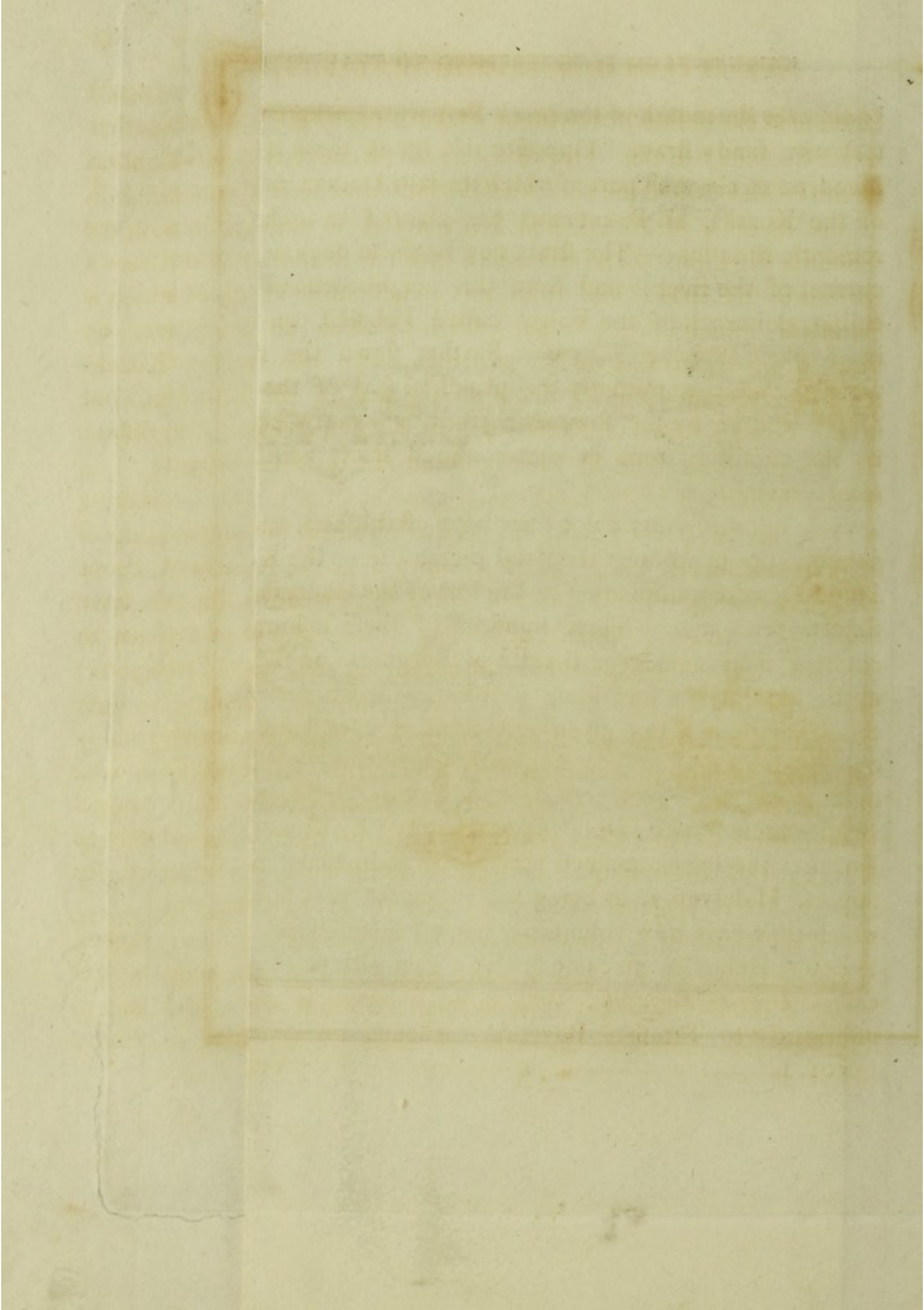
On the 20th of March we were necessitated to continue our journey on the Volga, not without danger. Near Proleika the bank exhibits broken layers of stone similar to those we saw near Karavainoi. Then begins a stratum of yellow sand, which becomes progressively thicker, and occupies the upper part of both banks: it is interrupted near the glen Sintshukha. At the distance of a verst and a half, it is again intersected by a small
nameless

nameless glen, and a large valley, which on account of its cabbage-gardens has received the name of Kapustnoë; and lastly, by another glen unnamed. The stratum of sand-stone rises continually, and forms the Strelnye-Gory, or arrow mounts, which ascend from ten to fifteen fathoms above the Volga. Near Strelnoi Buyerak, close to which these mounts begin, the cliffs that project above the bank form a rocky wall running towards the glen parallel with the river, and terminate in a pinnacle like a turret. Beyond the glen, the rocks on the top of the bank exhibit various figures like busts on pedestals, which project in a row from the bank; and a little beyond this, ten versts from Proleika, the high bank is intersected by a broad glen called Shirokoi Buyerak, which terminates three versts farther, near the Vodänoi Buyerak, or watery glen. A village is now built on the edge of the latter; it is inhabited by about two hundred new settlers from the district of Gshatzk, and other places.

Below Vodänoi the bank is somewhat lower; at the second Sintshukha-glen the strata of sand-stone again appear, and are partly formed by nature into curious divisions of rock, like brick-work, ornamented with a variety of vases. Of these singular rocks I have attempted a delineation on the second plate.

Towards the broad mouth of the rivulet *Olenia*, or the stag-brook, the lofty mounts of sandy strata retire. Here we were obliged to leave the right bank of the Volga, on account of a neck of land that runs into the river, and an extensive sand-bank, which was thinly covered with snow. We proceeded to a bushy island, beyond which we again approached the right bank,





bank, near the mouth of the brook Peskovatka, where we again met with sandy strata. Opposite this brook there is another island, on an elevated part of which the late Ataman, or Captain of the Kozaks, M. PORSITZKI has planted an orchard in a romantic situation. — The strata now begin to decline with the current of the river; and from this neighbourhood issues a collateral branch of the Volga, called *Voloska*, on which is built *Pogrominskaya Sloboda*. Farther down the river we reached *Dubovka*, formerly the principal seat of the Kozaks of the Volga: by the summer-road it is twenty-seven, but by the circuitous rout in winter almost thirty versts distant from Vodänoi.

Here likewise a new colony has been established, amounting at present to nearly one thousand persons, since the Kozaks of *Dubovka* were transplanted to the line of the Caucasus, about sixteen years ago. Three hundred of these colonists have enrolled their names in the list of burghers, or citizens, to evade the duty of furnishing post-horses and other imposts: this circumstance has given just cause of complaint to their colonial brethren, in common with whom they enjoy many immunities, both with respect to meadows and arable land. Besides these settlers, *Dubovka* is inhabited by three hundred Kozaks, who have remained here partly as invalids, partly as minors, *Malolyetny*, or being too young for that service, for which they have now voluntarily offered themselves.

Below *Dubovka*, we came first to a glen with two entrances, called *Dvoinoi Buyerak*; then a small nameless glen, and afterwards to *Tarassief Buyerak*. Thence we travelled to

Verchnaya Pitshuga, which presents a broad foreland near its mouth, particularly along the stream. On this place, at some distance from the Volga, there is a mill, and a farm-house, the property of the College-Counsellor *Rytshkof*. — Below the Pitshuga follows the Turäkoffkoi Buyerak, where a large fissure in the ice obliged us to withdraw across the river from the steep bank, and proceed along the opposite bushy island Pitshuginskoi. From this place we again travelled across the river, where it forms an angle in a straight direction to a glen, in which is situated Varshina Vataga, twenty-five versts distant from Dubofka. Here we changed horses, and travelled, on account of the increasing thaw, in the most expeditious manner possible towards Tzaritzin.

From the glen Varshina the bank becomes much lower than before, being at the utmost from five to six fathoms high: lower down, gentle hillocks covered with wood adorn the banks of the river; among which the glen Kotlovoi Buyerak winds in picturesque beauty. After passing a point of land which protrudes into the river, we met with a moderately high bank, which was intersected by the mouth of the upper, and at a small distance by that of the lower Metshetna. Between these vallies a village has been built on an eminence, by settlers of different nations. Somewhat farther, along the bank of the Volga, on a rising ground, the proprietor of this village, Colonel Zypletof, has a beautiful villa, with a garden well supplied with water. In this elegant retirement he enjoys the happiness arising from the consciousness of his public-spirited exertions in suppressing the rebellion.

This

This gentleman was commandant of Tzaritzin, and rendered himself conspicuous by his successful defence of that place against the banditti led by the rebel Pugatshof.

In this neighbourhood a branch of the Volga forms an inlet, called Akhtouba, which, although combined in various places with the principal stream, by smaller branches it continues to flow as a separate river to Astrakhan and Krasnoyarsk, where it falls into the Busan. In the main river rises an island, called either Daneshnoi or Golodnoë, that is, the island of money, or famishment: the lower end of it was carried away by the stream about four years since. In this low country the Volga is subject to continual changes, both on account of the loose texture of the soil, and the impetuosity of the stream at high water.

Close to the lower Metshatna, on the mouth of which are erected sheds for cattle, the bank is of a rusty brown colour, both at its top and base. The lower stratum is a very hard sand-stone, which in the glens has a rusty surface, while the upper stratum is of a very loose consistence, and but slightly combined by brown ochre. This latter species of stone contains many bone-binders, or osteocolla of long roots, partly of a ferruginous, and partly of a calcareous nature, but without cohesion; and the whole is so brittle that it readily crumbles to pieces between the fingers.

From the glen Bannoi to the Krutoi Buyerak, the strata of sand are partly petrified; and in some places we found thin strata of stone during the remainder of our journey to Tzaritzin, which is computed to be thirty versts distant from Varshina Vataga.

The lower banks, however, which continue to decrease on the whole road to Tzaritzin, and particularly towards the entrance of the lower Yelfhenka, consist chiefly of clay between sandy strata. Near Yelfhenka these elevations of the old bank of the Caspian Sea at length withdraw in a westerly direction towards a bay, and terminate near the Sarpa in a point of land called *Moo-Chammur*.

* * *

“ The sudden elevation of the soil, the sandy steep declivity of the higher tract of land towards the desert, the bays and promontories which it forms, and especially the saline nature of the lower parts of the loamy steppe, every where interspersed with marine shells — are circumstances that lead to a very strong conjecture respecting the former geographical state of the three deserts, known by the names of Kumanian, Kal-muk, and Yaikian. These barren regions are so exactly similar, that the extension of the Caspian Sea over them in former ages, and its communication with the Black Sea, appear highly probable. This hypothesis receives additional corroboration from the ingenious *TOURNEFORT**, who is of opinion, that the Black Sea had been formerly separated from the Mediterranean; that the water of the former is much above that of the latter; and that the descent of these waters into the Mediterranean had taken place at the time of the Deucalionian flood.

* Relation d'un Voyage au Levant. Tom. i. p. 80. Tom. ii. p. 63, 64, et seq.

“ We

“ We have the following incontestible proofs, that the Yaikian desert, as well as those of the Kalmuks, and the Volga, have been formerly covered by the waters of the Caspian Sea: first, the innumerable shells, which are scattered in every direction of these deserts, exactly resemble those of the Caspian Sea, and are not to be met with in the rivers; secondly, the uniformity of the soil, in all these barren regions, which, except the quicksands, consists merely of sand or yellow loam, combined with marine mire, without even a blade of grass, or any mineral strata, and with a bed of clay at a considerable depth from the surface; thirdly, the general saline nature of this soil, which obviously contains common sea-salt; and fourthly, the numerous salt-pits and lakes, nay, even the flat surface of this extensive desert throughout. Though these plains have been abandoned by the sea many centuries ago, they have not yet acquired a black soil, or turf, nor produced any trees or bushes. This sterility is owing to their dry situation in a hot climate, and to their peculiar saline nature: and, being supported by a clayey substratum, these regions could, in such a state, produce scarcely any thing but salt and marine plants; which, from their nature, afford but a small proportion of earth to the large quantity of salt they contain.

“ It is farther probable, that the high country between the Don and the Volga, and along the Sarpa, as well as the heights between the Volga and the Yaik, now called Obtshei Sirt, have been the old banks of the extensive Hyrcanian Sea. For in this high tract we meet horizontal strata; the soil is not impregnated with salt; the surface is covered with a solid turf, and presents a pretty thick layer of black mould; nay,
marine

marine shells are not discoverable here. On the other hand, it should be observed, that farther up along the Volga, where the country becomes more mountainous, we find whole banks of shells and corals; but this change of objects must have proceeded from a much more ancient and general Deluge of the Earth; for all the marine productions of these strata are of such kinds as are not to be found in the Caspian or Black Seas, but exist only in the abyss of the ocean.

“ From these observations the question naturally arises, By what event or phenomenon of Nature the Caspian Sea could have suddenly lost so much water, that the extensive and flat deserts, from the lower Don to the Yaik, the Yaik to the sea of Aral and the mountains of Mogulshar, that rise beyond that sea and are a southern continuation of the mountains of Ural, have become a dry country? This is the more remarkable, as the desert itself is certainly upwards of fifteen fathoms higher than the present surface of the Caspian Sea, which is always uniformly supplied with water from numerous rivers, and in which, for many years past no decrease has been perceptible.

“ TOURNEFORT has endeavoured to prove, by very cogent arguments, that the mountains of the Thracian Bosphorus were formerly connected, and formed a natural mound which separated the Black Sea from the Mediterranean, so that the waters of the former, arising from the great rivers Danube, Dniestr, Dniepr, Don, and Kuban, became a prodigious lake, much higher than the Mediterranean Sea, and even the ocean; that after the bursting of this strong boundary, either by an earthquake or the pressure of the accumulated water, the Black Sea

disembogued itself impetuously into the Mediterranean, till it acquired the proper equilibrium; and that, on the first impetus of this deluge, a part of Greece, and the islands of the Archipelago were overflowed and desolated by the inundation which appears to have taken place, according to the best historic authority.—These arguments admitted, we shall be enabled satisfactorily to explain the former decrease of the Caspian Sea; and the evident traces of its original height likewise corroborate Tournefort's opinion. For, in the first place, the high country, like a bank, borders on the low saline plain along the Sarpa, and progressively retreats from that river, and terminates in a precipitous point of land near the source of the rivulet Manyth, which flows towards the lower Don. This rivulet begins about one hundred and eighty versts from the source of the Sarpa, in a low plain above twenty versts broad, of a moist soil, much impregnated with salt, and interspersed with salt-pools; it flows through a low western country, and after running about one hundred versts, passes through a dry plain which extends as far as the steppe of the Crimea, towards the Don. At the beginning of this plain there are two considerable salt-pools, well known to the Kozaks of the Don by the name of Svätые Ošera, or the holy lakes. Between the sources of the Sarpa and the Manyth, the high country presents projecting banks of sand towards the West, while the Eastern region is an uniformly flat steppe, diversified at its commencement with wave-like ridges that rise above the high land, which abounds with intermediate stagnant pools. This plain stretches beyond the Manyth, through an high country, that declines to a level tract between that rivulet and the

Kuma :

Kuma: it extends almost to the source of that river, and is bordered by the promontory of the Caucasus. Here, therefore, the Eastern steppe which exhibits traces of the retreat of the Caspian Sea, is connected by low countries with the steppe of the Crimea, and other plains towards the Black Sea; all of which, as far as I could learn, are of an homogeneous nature with the former, and generally contain an equal proportion of salt.

“ If, then, the Black Sea, previous to its efflux through the strait of Constantinople, was many fathoms higher than it is at present, it follows, that the whole steppe of the Crimea, the Kuban, the Volga, and the Yaik, as well as the plains of Great Tartary, which extend beyond the lake Aral, have probably been only one general Sea. This Sea flowed round the northern point of the Caucasus in a narrow and shallow channel, the traces of which are still perceptible near the rivulet Manyth, and formed two vast and deep bays near the present Caspian and Black Seas. The rivers which rapidly poured in from regions then uncultivated, rich in wood and abounding with water, have probably in ancient times contributed in a considerable degree to this efflux of the Black Sea. In those ages, the seals, the various species of sturgeons, and other fish of that Sea, such as the *Atherina*, or silver-fish, the *Syngnathus pelagicus*, or needle-fish, and the indented muscles, could easily enter the Caspian Sea; which, according to its present situation, is too remote from all other Seas to admit a transmigration of these animals into its waters. On the transmission of the Black Sea through the Propontis, a great part of its shallow banks consequently became a saline steppe; and the Caspian Sea, being connected with the Black Sea only by a shallow strait, was thus separated

separated and became a confined inland lake. This phenomenon may be easily accounted for ; as the water of the Black Sea fell lower than the bed of the strait ; the Caspian did not receive so many deep waters as the Black Sea *, and was no longer supplied with the waters of the latter ; so that by the retreat and evaporation of the water from the low banks, a still greater extent of land was left bare, and hence this Sea was circumscribed in narrower limits. Perhaps then only the communication, which it formerly had with the Sea of Aral, was totally interrupted. The sand-banks became drift-sand, which accumulated into hillocks, such as appear in the sandy tracts of Naryn, and the lower Volga. On the dried bed of the Sea, the former islands appeared like small ridges of mountains, such as those of Inderfk, and several others of a similar form ; and after the sea had retired from the low ground, many hollows remained covered with water, and formed the salt-lakes and marshes which to this day we frequently find on the steppe. —

“ An objection may be raised against the decrease of the Caspian Sea, however obvious and striking, if we give credit to the report of travellers who mention the diminution of its banks near *Baku*, and that it overflows a part of that town. For, to judge from the nature of the phlogistic mountains of that neighbourhood, it is highly probable, that a sinking of the soil

* The rapid current of the Dardanelles affords to me a proof, that the Black Sea receives more water from its rivers than it can evaporate. For even admitting that the opposite current remarked in the deep parts of the same channel, contains sea-water more impregnated with salt, it is still obvious, from the well-known and decreasing saltiness of the Black Sea, that this current is less considerable than the principal stream. — *Author*.

and the mountains has taken place there, without any increase of the Sea. All the countries on the northern part of the Caspian Sea tend to prove that it has decreased, and probably continues to decrease in a greater proportion than the Mediterranean and other Seas. It is possible, however, that the separation of the Caspian from the Black Sea, and the exiccation of the strait which united them, have succeeded very gradually, and at a much later period ; without admitting the conjecture that this Sea had burst its bounds, while the separation, as is generally believed, was effected merely by the decrease of the waters of these Seas. After their communication was interrupted, the difference of the influx from their rivers might have operated in a similar manner, and thus have reduced the surface of the Caspian Sea far below the general level of the Ocean.

“ In the extracts made by STRITTER, from the writers of Byzantium, I met with a passage which induced me to believe, that the low country on the northern base of the Caucasian Mountain, where, in my opinion, the two seas had formerly been connected, were not completely dry in the fourth and fifth centuries of the Christian Era. PRISCUS, who accompanied the embassy sent by the Oriental Emperor Theodosius, in the year 449, to Attila King of the Huns, relates*, upon the verbal authority of a messenger who was returning to the Court of the Western Emperor, that the Scythians and Huns usually pursued the following course when they invaded Persia : “ They “ marched,” says he, “ first through a desert country or steppe,

* *Memoriae populorum olim ad Danubium, Pontum Euxinum, Paludem Maotidem, Caucasum, Mare Caspium, etc. incolentium, e scriptoribus historiae Byzantinae erutæ et digestæ a J. G. STRITTERO, Tom. i. p. 513.*

“ then

“ then crossed a morafs,” which the Romans have, however improbably, confounded with that of Mæotia, “ and afterwards continued their march over a chain of mountains, so that in fifteen days they arrived in Media.” I wish, however, to propose this only as very doubtful authority, especially since the traces of the Caspian Sea are less fallacious. A natural consequence of this decrease is the well-known lowness of its surface compared with that of other Seas: this circumstance incontestably proves the difference between the current of the rivers Don and Volga; particularly where they flow in a collateral vicinity to each other; the current of the Don being visibly ten fathoms higher than that of the Volga. — The disproportion between the high banks of the Yaik and the Volga, in a level country, affords another argument in support of my conjecture, and a proof of the real decrease of the Caspian Sea. The low situation of this Sea may be farther ascertained by the extensive course of the river Volga, which, though it rises in a Russian province, situated little above the usual level of the Sea, has not a slow but rather a rapid current.

“ From the present appearance of the high country, it is evident that even during the former connection of the Black and Caspian Seas, the mouths of the rivers Don and Volga must have been very different from what they are at present. The former fell into the Sea soon after its union with the Donetz, and the latter in the vicinity of Dmitrefsk. — The Manytsh apparently points out the channel of the waters, which, from their higher situation, retreated with the greatest rapidity towards the Black Sea; and according to the maps, the northern coast of this Sea is frequently intersected by similar traces, some of which

at present are rivulets, and others dry dells. The steppes on the banks of the Caspian Sea also exhibit similar traces, though the slower decrease of the water there has produced less perceptible effects. Perhaps even the supposed ancient bed of the Oxus, which is said to exist between the Sea of Aral and the Caspian Sea, is only another trace of the retreating waters.

“Whoever examines the country along the Sarpa, from the nature of its surface, will readily embrace my hypothesis, and consider it as highly probable. And if an accurate mensuration were made of the situation and boundaries of the high country, not only that from Tzaritzin, and Dmitreffk, through the steppe of the Kalmuks in a N. E. direction, but likewise S. W. from the Sarpa towards the river Don, and through the steppe of the Crimea, I have reason to believe that we could pretty accurately determine the *former limits of the Black and Caspian Seas*, in those ages when they formed one body of water.

“I could still allege many incidental arguments in corroboration of what I have here asserted. But that I may not be thought too prolix, I shall only mention two remarkable appearances near the verge of the high country: these will clearly demonstrate that a Sea really existed here in former times.

“The first is a sandy concretion, combined with calcareous matter, on the declivity of the prominent angles of the sandy promontory called *Moo-Khamur*, near the colony of Sarepta. As this concretion appears to have taken place from the effect of the salt water and its calcareous constituents, which may be easily recognised in the feculence or foam of the sea; and as this production seems to have been formed by being alternately moistened and dried on the shore, I venture to affirm that it
might

might even serve to determine the former height of the Sea.— Towards the South, under the upper ridge of the sandy heights, there lies a narrow border of indurated and, as it were, candied white sand, which is partly disposed in strata, partly in conglomerate and cylindrical masses of different sizes, which, not unlike calcareous *osteocolla*, exhibit traces of iron-coloured roots that pervade their axis. This border is only about an ell broad, and in many places narrower, as it extends into the contiguous mountain, which consists merely of a light drift-sand. The nearest part of this fossil border, when measured by the surface, is five hundred and fifty fathoms distant from the Sarpa, and I found its perpendicular elevation over the whole flat steppe, on the banks of that river and the Volga, when compared with their currents, to be thirty-nine fathoms and an arshine; an elevation which the adjacent country and its hills exceed by several fathoms.

“ As a second argument for my conjecture, I shall mention that the vitriolated layers of mire still exhibit traces of seaweeds and marshes: they extend along the banks of the middle *Elshanka*, twelve versts from Sarepta, particularly where the high country approaches the Volga and forms a deep valley. These beds of mire were examined by Professor GMELIN, who caused two perpendicular deep shafts to be sunk in them, till the miners arrived at a stratum of clayey sand, which forms their basis. Every naturalist, though unacquainted with the striking circumstances before mentioned, would doubtless pronounce these narrow layers of vitriolated earth to be the remains of a sea-marsh, formerly overgrown with sedge.” — Vol. iii. pp. 569—577.

We were entertained with this great diversity of objects during our winter journey to Tzaritzin, where we arrived early in the afternoon on the 20th of March, in frosty weather. The earth was still covered with deep snow; and the ice on the river was solid. In former years, at this season, and in these southern regions, according to the natural vicissitudes of things, the summer fields were sown, cattle grazed on the fresh pastures, and the first plants of spring used to be in full bloom. The cold North-east winds, which succeeded those from the North-west, continued with serene weather through the whole month of March, and the night-frosts were so intense, that the meridian sun could scarcely soften the earth.

Fig. 2





G. J. J. J. J.

Remarks during Excursions along the Southern Volga.

THE first birds of passage, ducks, starlings, and even wild-geese, had shewn themselves in February, but had again disappeared. Wild fowl of different kinds, particularly the red mountain ducks, which usually fly in pairs, we now observed in the fissures of the ice; and the birds of prey hovering singly in search of their quarry. The snow-hammer and winter-lark remained here till the second of April, before they emigrated to the northern regions.

At length, after a long and severe winter, two calm foggy days intervened with the new-moon of April; the wind changed to the East, and brought on a permanent thaw. Thus,

in the beginning of April, all the snow which lay on the eastern and southern sides of the heights suddenly dissolved ; the water rushed into the rivulets, and formed rapid torrents, which precipitated themselves into the Volga. The ice of this river now became very unsafe, being split in many places. We now remarked the arrival of all the birds of passage, among which were an incredible number of birds of prey, flights of swans, starlings, and geese of different kinds ; the first swallows on the fourth of April ; and several other birds either arriving hither, or withdrawing to the North.

On the 6th of April the streams of snow-water almost entirely ceased to flow, and the high lands began to dry : we saw in every direction the tulip, and the *Bulbocodium vernum*, or mountain-saffron sprouting forth, while the first chafer and *Citillus*, or mountain-mouse, awoke from their brumal slumber. On the 7th of April the *Charadrius gregarius* arrived in numbers, and on the same day the ice of the Volga broke up completely ; the thaw being accompanied with a warm rain. Vegetation now proceeded so rapidly, that on the 8th of April we were agreeably surprized to see, in the warm low grounds and vallies, the following flowers in full bloom, viz. the *Fumaria bulbosa*, or great bulbous fumitory ; the *Viola odorata*, or sweet scented violet ; the *Ficaria*, or lesser celandine ; the *Ornithogalum luteum*, or the yellow star of Bethlehem ; the *Scilla amoena*, or agreeable squill ; the *Tulipa silvestris*, or tulip of the woods ; the *Tulipa biflora*, or double flowered tulip, and the *Bulbocodium vernum*. On the 9th a white crane, or *Grus Leucogeranos*, by the Russians called Starkh, was shot on the opposite bank of the Volga : this bird was probably very old, as his back, and the

extremities of his wings, were adorned with feathers of a deep golden colour.

After this sudden change of the season, I began to prepare for my botanical excursions on the southern bank of the Volga; and my first journey was to the colony of evangelical brethren at Sarepta, or Sarpa, where I staid till the 18th of April, and then gradually proceeded on my journey towards Astrakhan.

With respect to Tzaritzin, I can add but little to what I have said of this place in the third volume of my former Travels. Except the newly erected booths, I found its buildings little if at all improved. But as in the summer of 1793 the greatest part of this town had been laid in ashes, it is to be hoped that it will be rebuilt on a more elegant and regular plan.

* * *

“ Tzaritzin is, next to Astrakhan, the first inhabited, and most ancient fortified place on the Lower Volga.

“ It is situated close to the mouth of the small rivulet Tzaritza, on the right bank of the principal river, which, a little farther up the stream, forms an island called Deneshnoi, and on the left side sends forth a small collateral branch called the Akhtouba. To the right of the fortress the Volga divides itself, and forms another island, which has received the name of Sarpinskoi Ostrov, from its extending beyond the mouth of the Sarpa. This rivulet joins the main river upwards of fifteen versts below the island, which abounds with wood, and has excellent meadows: there are several houses built on it. According to the old mode of building, the fortress consists of a high mound and bastions, without any outworks, and declines toward the steep

steep bank of the Volga, which is strengthened by pallifades. It is separated from the eminences that extend along this bank, by a spacious plain which occupies the angle between the Volga and the Tzaritza ; yet so unfavourably that these heights command the whole fortrefs. The works, which had been much decayed, were lately repaired by Turkish prisoners quartered near the fortrefs in subterraneous huts : they have rebuilt the fort, and strengthened the covered way with pallifades. This respectable state of defence was of great service in the year 1774, when lawless bands of boors and Kozaks infested this neighbourhood ; for Pugatshof, the leader of the rebels, attacked the town of Tzaritzin without success, and was obliged to relinquish the attempt. The numerous train of heavy artillery then in this place, and destined for Azof, but which, on account of the excessively bad roads, could not be transported to the Kumanian desert, contributed to this effectual defence.

“ The inner buildings of the fortrefs are indifferent, and it contains scarcely any good dwelling-houses : in short, the whole town, and even one of the three churches, are built of wood. The market-place is extensive, and contains a great number of shops, because the trade of the town is much benefited by travellers and Kalmuks. I found many wealthy merchants in this town, who carry on their itinerary trade the whole summer with the hordes of Kalmuks, and besides derive great profits from the neighbouring fisheries. The lower class of the inhabitants maintain themselves by rearing cattle, by the cultivation of cucumbers, sugar, and water-melons, which almost spontaneously thrive in this climate, and by fisheries, as well as by their emoluments as carriers. But there is a great want of mechanics

mechanics and artificers at Tzaritzin ; a circumstance from which the neighbouring German colonies of Sarepta derive considerable advantage. The number of Kozaks in the fortress consists of only one hundred men, who are merely employed as escorts : for the post stations, and what is called the line of Tzaritzin, are defended by the Kozaks of the Don. When I visited this place in August 1773, the garrison was composed of a small body of light troops of the line, and some incomplete battalions of militia*, among which were a number of officers, who had been dismissed, but were now employed on garrison duty. The Commandant of the fortress was formerly entrusted with the civil government of the burghers, and the district of the country which, however, is but thinly peopled. But in the year 1713 the High Directorial Senate appointed in this place a Court of Chancery for the management of civil and economical affairs ; an institution which promises to become more important, on account of the increasing population.

“ Beyond the limits of the fortress, along the Volga, and towards the eminences which divide the plain from the bank, there is an irregular suburb, inhabited chiefly by Kozaks, who some years since built a stone-church, which they were obliged to demolish, when the rebels made the attack beforementioned.

“ Before the present fortress was erected, small redoubts, the mounds of which are still to be seen, were raised near the brook Tzaritza ; where the indolent Kalmuks, even to this day, dig

* The author calls them *garrison troops*, in contradistinction to the *troops of the line*, which generally consist of the tallest and most robust men, while the former are of an inferior size: but this distinction being unknown in England, we have preferred the term *militia*, especially as they are reserved for home service.—*Transl.*

up numbers of musket-bullets, and old silver kopeeks. The line of Tzaritzin, which consists of a strong wall of earth, is defended on the southern side by a fosse and palisades. It begins at the fortrefs and runs over a deep glen, through which the rain water flows into the Tzaritza: the wall is continued over the two brooks Metshetna, which fall into the Volga above the town of Tzaritzin, and extends, without interruption, to the river Don, which is only sixty measured versts from the Volga. On this line of defence are raised four small redoubts, called Metshetnaya, Gratzhi, Sokora, and Donskaya, between which, at proper distances, are guard-houses, fortified with chevaux de frise. The whole line is defended by the Kozaks of the Don, who are subordinate to the Commandant of Tzaritzin.

“ The country around Tzaritzin abounds with every production of Nature, and is far superior in this respect to the whole arid tract of land bordering on the river Volga. Although the parts contiguous to mountains and the plains of the high country, are not all equally favourable to the growth of corn, there are many extensive regions which, notwithstanding the drought of this climate, would produce plenty of grain, on account of their internal humidity; but are injudiciously cultivated for no other purpose than that of rearing water-melons. This fruit arrives at great perfection in a soil that is peculiarly favourable to the vine, as well as to every other species of fruit the culture of which requires a hot climate. In short, all kinds of vegetables could be raised in the gardens of this country, to an uncommon size and of the richest flavour, if properly attended to. Many plants grow wild here, which are not to be

found in the higher tracts of the Volga, nor in other parts of Russia. The wild pear-tree thrives very generally in the vicinity of Dubovka. The mulberry-tree flourishes without any artificial aid in the low wilderness near the Akhtouba, and seems to be indigenous there, and in the dells along the Sarpa. Tamarisks, and the *Clematis orientalis*, first appear as native plants in the vicinity of Tzaritzin, and wild plum-trees are common on the banks of the brook Manytsh and the river Kuma. Chervil, or the *Scandix cerefolium*, is found in the Tshepurnik and other glens along the Sarpa; and Dittany, or the *Lepidium sativum*, grows wild on the higher nitrous soil near that rivulet, and in the vicinity of Sarepta. I have sown the *Phaseolus radiatus*, the seeds of which I obtained from China, in an uncultivated melon-garden near Sarepta; it flowered early, like all other Chinese plants which delight in a hot climate, and produced its seeds in the greatest perfection, in the month of August; though LINNÆUS says, that this plant does not flower nor seed in Sweden, except in the most powerful hot-beds. The dwarf almond, the plum-tree, and some other vegetables, frequently blossom a second time in this country, during autumn. The heights afford excellent pasturage, while the islands and the marshes between the Volga and Akhtouba produce abundant crops of hay. There is also sufficient fire-wood obtained from the low grounds; and timber is readily procured from the higher tracts, by the easy inland navigation. The soil is very favourable to the culture of mulberry-trees, which might be raised in extensive plantations: their leaves being valuable for the nutriment of the silk-worm, by which

considerable quantities of silk might be produced." — Vol. iii. pp. 638—641.

By an accurate measurement I found, that the ground on which the fortress of Tzaritzin stands, is one hundred and twenty-six English feet above the lowest water-mark of the Volga; and that the heights which extend thence along that river, form a still greater perpendicular elevation.

The upper part of Glubokoi Buyerak, or the deep glen, which intersects the first eminences above Tzaritzin, extends to the aforementioned line of defence, and becomes deeper every year. Towards the base it first presents beautiful dark grey strata of fine clay; next there is a lighter grey, lamellated Fuller's earth, interspersed with irregular layers of sand, and above them variegated strata of sand and clay, intermixed with pebbles of various colours: but on the upper part, where the water has scooped out a cavity in form of a basin, there is below the loam a stratum of the most beautiful, uniform, and delicate quartz-sand, of a milk-white colour, such as is held in the highest estimation by manufacturers of glass, and ornamental gardeners. — These mingled and variously broken layers sufficiently prove, that the surface of the hilly country consists of strata precipitated by the sea, and carried thither by the force of the water.

It will perhaps not be unacceptable to the reader, when I add a comparative table, shewing the highest point of the inundations of the Volga, during a series of years, since I formerly visited this country; the calculations having been

annually made by the military engineers stationed in Tzaritzin. From the year 1775 to 1792, the Volga exceeded the lowest water-mark, as follows :

	Feet	Inches.		Feet	Inches.
In the year 1775,	39	2	In the year 1784,	27	4
1776,	26	3	1785,	25	2
1777,	25	10	1786,	28	1
1778,	25	9	1787,	27	6
1779,	27	10	1788,	30	10
1780,	25	8½	1789,	31	3
1781,	26	6	1790,	26	9
1782,	26	0	1791,	25	2
1783,	27	1	1792,	28	6

It appears from this table, that since the years 1772, 1773, and 1774, when the Volga rose nearly forty feet, its waters have not since risen to that height. But I will not decide, whether the smaller quantity of snow and rain that had fallen in the higher countries, the greater evaporation of the Caspian Sea, or the progressive extension and cavities of the different mouths of the river, have produced this deviation from its former rise. Perhaps all these causes have co-operated to effect that change, and perhaps the highest swell of the water is, like the weather, subject to periodical variations.

Since my former journey to these regions, government has endeavoured to colonise the desert of Astrakhan. Several villages have been built on the banks of the Volga, even above Tchernoyarsk ; others on the Sarpa, on the sources of the Sall,

and along the borders of the river Kuma. These villages are mostly inhabited by Russians, except a few, in which Tartars, Tshouvashians, and people of other tribes, have settled, such as could be collected from different provinces which lie to the South and East of Mosco. Between Tzaritzin and Sarepta, we passed a handsome village, called *Otrada*, or "Recreation," together with an excellent mill, vineyards, and dwelling-houses, built for the convenience of a summer residence, in a pleasant situation, on the banks of the lower rivulet Yelfhanka, where it intersects the high country. This elegant spot is the property of the Lieutenant-general and Senator Nikita Aphanassievitch Beketof, a very active economist. On the post-road, close to the banks of the Volga, he has established a considerable colony of emigrants from Russia Minor. But the barrack, which formerly stood near this colony, and which lately had been let to the visitors of the mineral well at Sarepta, was demolished in the spring of 1793, and its materials employed for other purposes. The indifferent accommodations which patients met in this barrack, have been freely described in Boltin's Account of the Medicinal Waters of Sarepta, published in the Russian language.

The soil is sufficiently fertile on the declivity of the high lands in these regions; though intermediate saline spots occur, where the seed necessarily perishes. Senator Beketof has endeavoured to fertilize those spots by manuring them; but I advised him to make experiments for the amelioration of the soil by lime, or by an admixture of calcareous marle, which would probably decompose the neutral salts, and disengage the alkaline particles of the soil.

Otrada



Otrada is the first place in Russia where white mustard has been cultivated on a large scale ; where oil is expressed from it, after it has been decorticated in hand-mills, and the mealy part which remains is used like English mustard : it is by no means inferior to the latter, and is exported to foreign markets. The great profits arising from this branch of rural economy, and the process of the manufacture, have been circumstantially described by Senator Beketof, in the Transactions of the Free Economical Society at St. Petersburg for the year 1796. And it deserves to be remarked, that mustard generally produces sixty-fold crops, and that the oil and flour of mustard exceed the value of wheat in a similar proportion.

The mill built on the estate of *Otrada* is an extremely complicated piece of machinery, which was first announced in 1796, by the Economical Society, and of which a minute description and representation will be given in the next volume of their Transactions. I shall, therefore, in this place only mention that the lower *Yelshanka*, near its descent from the high lands, is dammed in for the purpose of supplying the mill, and that almost the whole of the stream, after passing through the sluices, is farther employed for watering the fields and gardens.

Although *Sarepta* had, soon after my former journey to these regions, in 1773, been plundered by the rebellious bands of *Pugatchef*, yet I found it considerably improved, beautified, and in a state of increasing prosperity. The market-place is regular, and adorned with elegant buildings ; particularly the church, and the well-built mansions of the Moravians, which forcibly strike the eye, as they are represented on the third plate : next to these are, *a*, the beautiful house of the Superintendant ;
b, the

b, the respectable dwelling appropriated to the widows ; *c*, the market-house ; *d*, the inn ; the manufactory of candles, and the distillery of corn-spirits. The market-place has a fountain in the centre, which is furrounded by a grove ; and the square itself, with the principal streets, are beautified with rows of poplar trees. The water of the fountain, which arises in the neighbouring farm, marked *e*, had been much increased by another spring brought from the village Shönbrun ; but as this water was very inferior, it has again been separated, and conveyed through pipes into every street, so that the inhabitants have the best water from the fountain for drinking, while they are conveniently supplied, by the other spring, with that for common use.

The number of valuable inhabitants has been much increased, not only by new settlers, but also by natives ; all the houses in the streets of Sarepta are built partly of solid materials, partly of wood, and adapted for two families under one roof. The internal increase of the colony is, however, not so considerable as it would be, if the late marriages, conformable to a custom of the Moravian Brethren, were no impediment to population : many of the unmarried sisters are consigned to a sickly life, or an untimely grave ; and other useful members of the community are carried off by difficult parturition, to which females married at an advanced age are generally subject. The inhabitants nevertheless enjoy a good state of health, since they have become accustomed to the climate ; and they also appear to be perfectly satisfied with their lot in the world. Every family has sufficient cattle, and small gardens along the Sarpa, which are made with much labour by carrying soil thither

thither from the surface of the high desert. In preparing a garden, the upper stratum of sandy marle is first mixed with the subjacent layers of clay and the interspersed calcareous marle : this compost is thrown on the banks of the Sarpa, which are farther consolidated by hurdles. The saline quality of the soil is corrected by rain and snow-water, and by frequent waterings from the Sarpa, so that the intermingled soil is thus prepared for the production of all kinds of culinary vegetables, for plantations of tobacco, fruit-trees, and the vine.

Several of the inhabitants have made a prosperous attempt in the cultivation of the vine. Among others, the vineyard belonging to the widow of the late Doctor Weir, that established by M. Nitschmann, an apothecary retired from practice, and particularly that of the present Physician to the Colony, Dr. Seydel, a very worthy and benevolent character, all deserve honourable mention. This gentleman has with great expence established the most extensive garden on the right bank of the Sarpa, and he is indefatigable in its improvement. He has planted a considerable vineyard with above one thousand productive vines ; besides an orchard ; a kitchen-garden ; and what is still more remarkable here, he has been successful in rearing from the seed a pretty large pleasure-wood of birches. His vines are disposed over bowers and arched walks, on a southern declivity, and produce a white and a reddish wine of good quality. He has also planted a considerable number of mulberry-trees, with a view to introduce the cultivation of silk by the worm. The *Elæagnus latifolia* endures the cold of winter in his garden, without any covering.—It is only to be regretted, that the friends of horticulture, in this place, are still in
want

want of good species of cherry, plum, and other fruit trees, which they might easily procure by importing foreign shoots, and ingrafting their native trees.

The best wine produced here, which is similar to Champagne, is that of M. Nitschmann, who is a persevering and judicious botanist; he takes uncommon pains in pressing and fermenting his wine, by collecting the white Hungarian grapes of his favourably situated vineyard, plucking them from the stalks, and keeping the first juice separate, of which he annually obtains about twelve barrels; the remainder he passes through the press, with the addition of water, and converts it into an acidulated drink, or vinegar. He has observed that, on account of the luxuriant growth of the deep-rooted old vines, their branches ought to be lopped so as to leave ten, twelve, and even fifteen eyes, because the lower buds are usually unproductive, while the upper ones frequently have three shoots from two to three fathoms in length, each of which bears two or three bunches of grapes. After a few years, he cuts down the old vines, which are almost a foot in circumference, and replaces them with vigorous plants two years old. Most of the cultivators of the vine, in this country, are now convinced from experience, that they cannot obtain a good vintage, without following his ingenious example.

M. NEITZ, a Surgeon, has likewise planted a new vineyard near a spring, on the declivity of the high land, where it forms the angular point called *Moo-Khamur*. But a common garden which the unmarried Moravian Brethren have commenced in a valley, is not in a promising state for either wine or fruit, but may be productive of culinary vegetables. The valley is called
after

after a rivulet, Thepurnick, or the brook of herons ; which flows from the heights near the village Shönbrun, and glides in a southern direction to the Sarpa.

The most remarkable manufactories carried on by the United Brethren are the following : nine or ten looms for weaving handkerchiefs of a mixed texture of silk and linen ; eight looms for manufacturing cotton stockings and striped night-caps, which are in great demand for the women of the Kozaks. Among the stocking looms imported from Voigtland, a province in Germany, there is one constructed of wood similar to those made at Obernhau, in a mountainous part, called the *Erzgebürge*, in which the *echappement* is supplied by the peculiar mechanism of an indented spiral wheel. The former of these looms costs in Germany from sixty to seventy dollars, or from ten to twelve pounds sterling ; while the latter, of wood, is bought on the spot for twenty-eight dollars, or about four pounds ten shillings.—There is likewise here a small manufacture of Manchester-goods, such as velveret and calico, which are made in great perfection, but cannot be sold as low as those imported from England.—Without mentioning the less important trades, as goldsmiths, watchmakers, bookbinders, shoemakers, tailors, and others, I shall only observe, that the cotton yarn used in the forementioned manufactories is also dyed here, for which purpose a particular work, for dyeing Turkey-red and Indigo-blue, and a smaller work for dyeing the Manchester-goods, are established in this building. The Turkey-red is here treated with oil ; but the colour is inferior to that produced by the Armenians at Astrakhan.

Next to the house of the fraternity, there is a tan-yard, in which the thinner kinds of leather, and strong hides for soles are prepared; adjoining to this is the carpenter's yard, the baking house, and at a small distance the slaughter house, both built of stone. Close to these, the United Brethren were, during my stay here, employed in building a stone-kitchen, furnished with every convenience. The main building itself was enlarged by an additional wing, in the erection of which, however, the garden has been desolated and covered with rubbish.

In the house inhabited by the United Sisters, besides the usual female employment of sewing, washing, and other domestic occupations, handkerchiefs are now manufactured, and various articles of embroidery finished with uncommon skill and elegance. The garden, which the Sisters cultivate without any assistance, is a pattern of industry, cleanliness, and regularity.

The distillation of corn-spirits, and manufacture of candles, are important branches of trade carried on by the colony, and the latter is particularly profitable, as the candles of this place are sent to St. Petersburg, and thence exported to distant countries.

The mill belonging to this colony has, in its present improved state, a sawing mill, as well as an excellent flour mill, of two lofts on one side for grinding wheat, and on the other side two lofts for rye-meal, and a stamping mill for millet. Double wheels have been placed over each other, to connect the machinery with the upper wheel at high water, and thus keep the mill continually going. In the year 1783, the dam of this
valuable

valuable mill was swept away by the extraordinary rise and pressure of the water of the Sarpa.

The brewery represented on the third plate, and marked *f*, is at some distance from the colonial houses, on the banks of the Volga, and is a most profitable branch of business. The sale of beer is very considerable in the inn, on account of the numerous transports which pass through this place to Astrakhan. In autumn 1792, before the ice on the Volga had acquired sufficient solidity to support loaded sledges, no less than sixteen thousand nine hundred of these vehicles, each drawn by one horse, passed through Sarepta. — The ingenious inhabitants of Sarepta brew a kind of beer from their very abundant and cheap water-melons, with the addition of hops: they also prepare a conserve or marmalade from this fruit, which is a good substitute for syrup or treacle. Perhaps a tolerable wine might be made of melons, by proper management.

The chemists of Sarepta have, for several years past, followed a process of purifying the common salt obtained from the lakes of this country, and by the natives called *Busun*. This highly purified salt is sold at a moderate price, and would be a profitable article of commerce.

A few years ago the *Mus decumanus*, or grey wall rat, came in numbers to Sarepta, and pursued their journey, after swimming over the milldam, in open day, towards Tzaritzin. The *Citillus*, or mountain mouse, multiplies daily, and is very pernicious to the crops produced by the industry of the husbandman.

The Italian and common poplar, as well as different species of the willow, flourish in this neighbourhood; and there is no

doubt that, as they grow luxuriantly from shoots, these useful trees might easily be reared, even on the dry steppes, if they were properly watered in the first summer. In Tchernoyarsk I remarked with pleasure, that the new-planted trees were covered with slips of old bark, by which they were not only kept cool in hot weather, and their tender bark secured from cattle, but the circulation of the sap was more freely conducted to the uppermost eyes, or buds, where the foliage was of the greatest importance to the growth of the tree.



Vernal Journey to Astrakhan.

THE first village below Sarepta, on the banks of the Volga, is *Lutshki*; the second, according to a former regulation of stages, is *Tatianovka*, or *Svetloi Yar*, which signifies *the shining bank*: the latter is twelve versts from Sarepta, and has received its name from the high naked bank on which it was built. The desert, over which we now travelled, produced great numbers of early white and yellow tulips, the *Tulipa biflora* and *silvestris*, which grew partly intermingled, and partly in separate clusters. We proceeded farther along a steep bank, from which we beheld the low country overspread with multitudes of wild-fowl. In these regions the road is frequently made on the very

edge

edge of a precipice formed by glens or banks, because this part of the height soonest becomes dry in spring. But as the frost of winter, and the subsequent rains of spring, loosen pieces of these banks, scarcely a year elapses without dangerous accidents occurring to travellers, inasmuch that sometimes men, horses, and waggons are precipitated with the falling bank down the steep. An accident of this kind happened the preceding year to an inhabitant of Sarepta; but he had the good fortune to save his life together with that of his horse, though the cart was shattered to pieces.

About eighteen versts farther the new village of *Popovitzkaya*, or *Raigorodok*, is situated at a small distance from the ancient post of *Popoviska*, and inhabited by the burghers of *Tzaritzin*, who formerly were scattered over this dry region. We left the *Volga* at this place, and travelled over a flat steppe, on which we observed many sepulchral hillocks. Here, as in the whole of this country in general, the mountain-mice notwithstanding their small size, have thrown up the earth in considerable heaps. On our journey westward from this place toward the *Sarpa*, we were informed that about seven versts from *Popovitzkaya* there were several sepulchral elevations, or *Kurgani*, vaulted with bricks. These the peasants break up, and carry away to make their stoves. After leaving this field of death, we again approached the *Volga*, and passed the *Pestshanaya Balka*, or sand-pit, towards *Yershova Vataga*, and *Nafonistshef Yar*, where a store-house of fish is established. The hip-bone of an elephant, and several ivory teeth have lately been found here, on a precipice of the bank. A Kalmuk brought me an imperfect grinder of an old elephant, which he had found in a glen of the steppe.

steppe. From this place to Yerfhova Vataga is reckoned seven versts, and about three versts farther there is a farm containing four houses for rearing cattle, on the manor of Naryshin. The major part of the nobility, or proprietors, who have divided the lands on the banks of the Volga, pay little regard to either population or tillage. They only endeavour to maintain their right of possession by inconsiderable establishments, in order to derive some advantage from the fisheries.

After travelling eleven versts, I passed the night of the 18th at *Solotnikofskoi*, or *Salnikova*, a village situated near Solotnikova Vataga, and which was formerly the only one in this neighbourhood. Above the village is Yablonnoi Buyerak, or the appleglen, the bottom of which, between the thickets, was now covered with young chervil, which grew on a black mould. We had before observed this herb near Sarepta, in what is called the chervil glen. The sandy marl of the steep banks of Yablonnoi Buyerak, is interspersed with numerous indented muscles similar to those of the Caspian Sea, and which probably have been deposited by the Ocean. The large and steep Solänoi Buyerak, or salt glen, is about four versts below the village, and extends, with two of its dependent branches, a considerable way into the country. Every species of marine plants grow along the sides of this glen in abundance; but at the bottom the *Ulmus pumila*, which is of a considerable size, and the *Thlaspi arvense* and *Bursa* were the only plants in blossom. I observed on its steep banks several layers of Fuller's earth, of an orange colour, above the sandy strata, and mingled with well-preserved shells, like those of the Caspian Sea. On the southern side we saw the *Tulipa biflora* and *silvestris* already fading, and the

Scolopendra

Scolopendra morfitans creeping through the chinks of clay. Near this formidable glen, the criminal enterprize of the Rebel Pugatshof for the last time proved unsuccessful. He had taken a position contiguous to Vataga, and occupied the small redoubt which had been established for the post-station. But the well-directed attack of General De Michelson, and the fire of his cannon loaded with grape-shot, soon put the rebels to flight, and precipitated whole bodies of them into the glen, and down the banks of the Volga, where they were driven together and destroyed. Between the village and the glen, there are a great number of sepulchral hillocks which, as it appears, have been so amply filled with dead bodies, that their tops have sunk into the form of a basin.

The population of the village Solotnikova is two hundred persons, being all that remain of five hundred, who were formerly transplanted from the northern parts of the governments of Ustyug and Vologda to what is called the Kumanian road: but in consequence of the sterility of that region they were sent hither. The heat of the climate has destroyed a part of these settlers, but the survivors are now accustomed to it, and are in great arrears to the Crown, from their idle and unsettled mode of life, and the obligation they are under to liquidate the taxes of their deceased relations.

The distance from Solotnikofskoi to the village Kamennoi Yar, or the stone bank, is about eighteen or twenty versts, and two versts farther there is a post-stage. This village, which is situated near Kamennaya Vataga, is built in a glen, and belongs to the merchant Kostromin. Its inhabitants consist of Tartars, Tshouvashians, and other nations, who were established here, and
subject

subject to similar obligations with the new settlers before mentioned. On our approach within a verst of this village, we observed the ridge of a steppe, which formed some hillocks, extended obliquely from the West, and terminated on the high and steep bank of the Volga, called *Kammenoi Yar*. This ridge contains a grey-coloured stony stratum, nearly similar to that of Kamyshenka, which is recommended by Lovitz for hygrometrical plates. No trace of this argillaceous earth is to be seen on the opposite bank of the Volga; but, according to its direction, it appears to belong to the horizontal stratum which is found in the steppe on that side, under the names of Bogdo, Tshaptshatshi, and others. There is a cavern of no great importance in the stony bank of this place.

Kostromin has employed a Russian mill-wright to construct a windmill near this village, after the model of those of Asia: it has a horizontal wheel, to which a kind of mats or sails are fastened: but the mechanism is so badly executed, that the mills for grinding meal and groats, which form the lower part of the machinery, being connected with the former, are almost useless. I shall have occasion to describe these mills more particularly.

We saw only the early tulip, and the small *Ranunculus*, which perfectly resembles the *R. nivalis*, in bloom on the steppe. We met this day a large flight of curlews on their passage from the northern regions. In the afternoon, and part of the following night, I travelled the remaining sixty versts to Tshernoyarsk; and in all that extent of road I did not meet with a single village. I passed the Väsovka, which had been deprived of its bridge by a torrent of snow-water, and towards morning

morning arrived at Tifernoyarsk, where I remained the 20th; as in consequence of the continued cold weather, and the check which all the plants had received in their vegetation, I was unable to pursue my botanical researches.

We observed, however, in the ditch of the fortress, the *Ranunculus falcatus*, *Ornithogalum bulbosum* and *luteum*, *Sinapis rubella**, *Alyssum calycynum et minutum*, and *Taraxacum*, in blossom. The earliest insects here are the *Papilio daphidice*, and different species of *Silphæ* and *Histeres*. I had before observed the *Phalargium araneodes*, or scorpion-spider, moving in the crevices of the clayey bank of the Volga; and several other insects on the steppe. In all dwelling houses, the *Musca vibrans* crept about in swarms upon the windows. The birds which we most commonly met with in the dry desert were kites, which flew in small flocks; a small kind of falcons, the red duck, bustards, crows, jackdaws, magpies, great and small larks, and starlings. The inhabitants of all the towns and villages of the Volga make cylinders of bark, which they place on poles in the farm-yards, to entice these birds to build their nests there. On the barren and dreary steppe of these environs, scarcely any plant is seen but the *Anthemis millefoliata*, and the *Achillea tomentosa*, between the two most common species of wormwood, *Artemisia maritima* and *Artemisia contra*. This last plant indicates the most barren soil impregnated with salt, a soil which produces only the flowers of the *Tulipa biflora*. The *Tulipa silvestris* bloomed on the verdant and more fertile spots: this flower grows to a very large size where

* *Raphanus tenellus*. PALLAS'S Travels, Part iii. Supplement, page 741. N. 105. Tab. 50. Fig. 3.

the soil is moist, and consists sometimes of eight or ten leaflets, and is sometimes double. The *Ornithogalum luteum*, on the contrary, is dwarfish throughout this steppe; and we only saw the first leaves of the *Verbascum Phæniceum*.

Tshernoyarsk is built in the form of a grand polygon, composed of five entire, and two half bastions. It is situated on the steep bank of the Volga, and surrounded by a dry, wide, but not very deep fosse, strengthened with pallisades. This fort has but one gate-way, which is on the side towards Tzaritzin, and so narrow that a waggon with three horses abreast can scarcely pass through it. On this side there is a suburb, beyond which, on the steppe, is a cemetery with a considerably large church built of stone, with two towers, adorned with gilt cupolas. Tshernoyarsk is a place of some consequence; it is well built within the limits of the fort, has a good trade, and opulent inhabitants, the principal part of whom are employed in a very lucrative and extensive fishery.

The Volga is here of a considerable breadth, notwithstanding some sandy isles that rise from its bed, and a large stream called Volodimerovka, that branches from it towards the East. A high wind causes the waves of the Volga to beat upon the shore with such force as I scarcely ever have seen equalled, except in the river Thames, below London: at high water the Volga is said to rise here to about thirty feet. Several bivalve shells of the Caspian Sea are found in great numbers on the high bank of this river. This bank principally consists of a sandy marl, and some small flat stones of a light yellow clay are seen here: they swim for some time on the water, and are about the size of a ruble or florin. Selenite is found here

scattered in crystals, as well as in several other places on the bank of the Volga.

I continued my journey on the 21st. The sepulchral hills of the Tartars are common in the vicinity of Tshernoyarsk; but they are generally empty, and on that account have remained undisturbed. Perhaps they are the tombs of the later or Nagay Tartars. The beautiful low country *Solänikovo Saimishe*, which lies beside the fortrefs, swarmed at this time with innumerable aquatic birds, such as geese and ducks of all kinds, cranes, herons, and kites, which fly in numerous flocks.

The distance from Tshernoyarsk to the advanced post of Gratshefskoi is thirty-two versts; and on our way we ascended some sandy heights. Towards the post of Vertlanskoi, distant thirty-three versts, the steppe became more sandy and hilly. The violent storm from the S.E. which always accompanies the spring in this region, began on the 20th, and increasing this day, blew the dust and sand directly in our faces.

After having passed Kopanofskoi, the nearest town of the Kozaks, distant twenty-one versts, we again came to a clayey steppe. The *Tulipa Gesneri*, of a bright red and yellow, had begun to blow here in great abundance; its leaves were exactly similar to the early tulip commonly called *Duc van Toll*. The *Tulipa biflora* was already beginning to fade. The nights, however, still continued cold, and we saw fire on the steppe, at a considerable distance*.

On

* The steppes are frequently fired, either by the negligence of travellers, or wilfully by the herdsmen, in order to forward the crops of grass; or, it may be, out of malice, as some years since the Kozaks of the Yaik did; when, having
risen

On the 22d I proceeded towards Yenatævka. At a short distance from Kopanofskoi the steppe rises in hillocks, and is more of a sandy than clayey nature; but the sand under the surface is combined with clay. All the plants of this region are dwarfish, and have a withered appearance, as is commonly the case on a sandy soil. The *Ornithogalum bulbiferum* grew as abundantly in the vallies as if it were sown, and sometimes had seven or eight filaments, and as many anthers. The white tulip still presented itself, though only singly. The willows and poplars had begun to bud in the vallies. In those parts where the steppe begins to rise in hillocks, and in the glens on the bank of the Volga, several bones of the Elephant have been discovered. I obtained a jaw-bone pretty much petrified, and, as it were, coated with small gravel and muscles.

In the environs of Yenatævka we again met with Kalmuks, who are fond of passing the winter here in numerous hordes, but who in the present year had been infected by the small-pox, which was epidemic along the Volga, and obliged them to disperse; this is a disease as dreadful and destructive to them as the plague. According to the latest lists which I received, the remains of this remarkable people, who since the introduction

risen in rebellion, a small corps of Russian troops advancing against them, they saw themselves all at once almost entirely surrounded by the high grass on fire. Such a catastrophe often occasions great mischief; the flames spread themselves far and wide, put the dwellings of the inhabitants in imminent danger, consume the corn on the ground, and even seize on the forests. Many prohibitions, under severe penalties, have accordingly been issued against this practice, but they seldom have any effect. All the steppes may be considered as a sort of common land. — See Mr. TOOKE's "*View of the Russian Empire*," vol. i. p. 84.

of the provincial governments, and the division of lands, are confined to a more limited situation, still consists of eight thousand two hundred and twenty-nine *Kybitkes*, or family-tents. Notwithstanding the separation of a large horde of Derbetes who, discontented with their lot, after the extinction of the principal lineage of their hereditary princes, have withdrawn themselves from this neighbourhood, and settled between the Don and the Yaik, where they have associated with the Kozaks; the number of these amounts to four thousand nine hundred *Kybitkes*, or hearths, on the steppe of the Volga. Of this number are reckoned :

Under the dominion of the Crown, the Torgotes of
the tribe of Baga-Zookhor, formerly subject to

Colonel Prince Dondukof	-	-	-	-	3086
Under Prince Muku-Uken	-	-	-	-	926
Under Zebek Ubasha	-	-	-	-	996
Under Prince Tümmen, who now has the rank of Major	-	-	-	-	892
Under Sandshi Ubasha, and formerly subject to Prince Zandyk	-	-	-	-	1432
The vassals of the late Prince Zagan	-	-	-	-	79
Under Nocoin Köbenn and his brothers	-	-	-	-	40
Under Byteke	-	-	-	-	21
Under Zagalai-Noyon	-	-	-	-	70
The vassals of the late Zendenn	-	-	-	-	159
of Prince Dshall	-	-	-	-	92
of Soodshi Noyon	-	-	-	-	251
of Nima	-	-	-	-	15

The





The vassals of Ekrem	- - - - -	9
of Zebek Noyon	- - - - -	152
of Shambai-Noyon	- - - - -	9

To this number may also be added about two hundred baptized, free, and civilized Kalmuks, who dwell in Astrakhan and its vicinity.

In my "Collections for the elucidation of the History of the Mongole Tribes," I have given such circumstantial details of their constitution, modes and vicissitudes of life, religious superstition, and idolatry, that any farther account would be superfluous. Frequent attempts have been made to induce them to form a settlement; but they are so much accustomed to uncontrolled and vagrant habits, that it was only from the extreme indigence of their fugitive brethren who have lately begun to emigrate to the province of Songary in the Chinese dominions, that their present rulers have been able to compel this unsteady people to apply themselves to agriculture and reside in settled habitations. We trust the two plates representing the national dress and felt hats of the Kalmucks will not be unacceptable to the reader. The fourth plate represents a Kalmuk of the lower class, and a priest of that nation, in their peculiar dresses. The fifth plate gives the portraits of a woman and girl of the same people. In both, the expression of the features of a nation which is so well characterized, is perfectly accurate. In order to gratify physiognomists, I have added, by way of supplement, in the fourth vignette, the profiles of two girls, one of the real Mongole race, and the other of the Kalmuks, both of which are very exact delineations

tions of these two kindred nations. The profile of a youth of the Nagay tribe, in the same vignette, will show how well the Mongolian form is still preserved, notwithstanding the different mixtures with the Tartar race; a form which has been unchanged among the Nagays through the lapse of many centuries. It farther proves how strongly that nation impress their characteristic traits on the people with whom they are intermixed; for instance, on the Chinese and the Russians who live beyond the Baikal.

Beyond Yenatævka the steppe becomes more sandy as it decreases, and at unequal distances displays banks of moving sand, which become progressively more frequent. A quantity of decayed shells are everywhere found intermixed with this sand, and some Caspian muscles in a calcined state. The dry steppe is very hilly, though it does not rise more than two or three fathoms above the level of the Volga. The low country abounds with grass, is interspersed with willows, and as it were sown with tulips.

The *Iris pumila* appears here of two colours, being tinged with yellow and violet. Two beautiful species of *Astragalus* were now in bloom, on the sand-banks, in considerable numbers: they are frequently met with, though not so early in the season, through the whole extent of the Caspian steppe. The species with the yellow flower has been improperly denominated, by Linnæus, *Astragalus trogoïdes*; the other, which I have formerly confounded with *Astragalus depressus*, is not contained among the Linnæan genera; it bears flowers of a white or reddish colour.

Near *Kossikovskoi Stanitz*, which is twenty-five versts distant, the beautiful *Ornithogalum reticulatum* * grows in abundance, as well as in all the country round Astrakhan. I am therefore astonished that it should have escaped the researches of Gmelin, who was, indeed, too much inclined to consider many common plants as a new species, when he could not immediately classify them. The *Ornithogalum reticulatum* thrives best among the grey sea wormwood, and the early sedge of the marshes. I observed here a small variety of the *Ranunculus falcatus*, *Lithospermum arvense*, *Veronica verna*, *Iris pumila*, of different colours, and a small species of the *Tulipa sylvestris* in blossom. The flowers of the *Astragalus alopecuroides*, and *Atraphaxis* were just beginning to open.

As the continued wind from the sea caused the water of the Volga to swell so as to overflow part of the low ground, I was obliged to pursue my journey over difficult and fatiguing sand-hills; in consequence of which I did not arrive till late in the evening at Samyangorodok, where I staid during the night.

The heights adjacent to this place are banks of sand drifted over a stratum of clay, and on which the plants called by Linnæus *Pallassia Caspica*, *Corispermum squarrosum*, *Hedysarum Alhagi*, *Spartium aphyllum*, and others which grow on sand, thrive in abundance. The first, as well as the *Axyris ceratoides*, and *Artemisia frutescens*, put forth young shoots. The roots of the *Pallassia* lay like tape above the sand, and were several fathoms in length. Farther on, the sand, in consequence of its lying nearer to the clayey stratum, became more consolidated;

* PALLAS's *Travels*, Part iii. Supplement, page 727. Plate D. Fig. 2.

and

and there also, besides the *Astragalus tragoides*, the *Iris junci-folia* * flourished exuberantly.

We were obliged to suffer the inconvenience of the sand till we reached Baranova Vataga; as we wished to continue the rest of our journey along the shore of the Volga to Lebäshie, or the out-post of the swans, which is twenty-four versts distant from Samyangorodok. We pursued our route the same day to Solänka, and slept in a place situated opposite Astrakhan.

Below Lebäshie there are deep hillocks of quicksand, the bases of which rise but a little above the surface of the Volga. Between these we observed in different places a saline soil, covered with a white incrustation of salt, about one-eighth of an inch thick. In the dells between the hillocks we observed the willow and the tamarisk, as well as the *Astragalus tragoides*, which blooms in all parts of this neighbourhood, and has long luxuriant flower-stalks, owing to the moistness of the soil.

The incrustations above mentioned, first afforded by crystallization a beautiful Glauber's salt, with an alkaline basis; and the mother lye contained a digestive salt, supersaturated with alkali, which was not susceptible of a crystalline form.

On the 25th I was ferried over the Solänka, as its bridge had been carried away by the flood; and thence I proceeded in a boat on the Volga to Astrakhan.

All that I have to say of that important place, the principal seat of our Asiatic commerce, and the general magazine of fish for the whole Russian empire in Europe, with my observations

* *Iris tenuifolia*, *varietas*? PALLAS's Travels, Part iii. Supplement, page 714. N. 66. Plate C. Fig. 2.

and remarks, I intend to publish at my return to that city, in the month of August. I now hastened with Mr. Geisler to the steppe beyond the Volga, that I might obtain exact drawings of the rare vernal plants. I proposed to give an account of the most remarkable plants I might observe during a journey peculiarly devoted to botany, and in which two young gentlemen, Mr. Dokushaëf, teacher of Natural History in the Normal Academy at Astrakhan, and the student of pharmacy, Mr. Swenson, both eager of instruction, voluntarily accompanied me.

My stay at Astrakhan was protracted by various circumstances till the 5th of May. During that time I collected beautiful vernal plants, had drawings made of them, and prosecuted various useful inquiries. This day at noon I dispatched my light equipage by water, and went myself in a small boat, at three o'clock, up the Volga, with a fair south-east wind. I passed the convent of Bolda on the little river of that name, which forms an isle near its source; and continued my route in sight of the Kafatshei Bugor*.

Behind Astrakhan we passed the convent of Pokrofska, and proceeded with a fair wind up the Bolda. On leaving Tsherpakha, which belongs to Mr. Beketof, sometimes with the assistance of oars, and sometimes with sails, we steered the greatest part of the time towards the S. E. and E. S. E. through what are called the *Busurmanka*. These are canals, in some parts covered with rushes, and in others confined within dry

* Bugor, in the Russian language, properly signifies a hillock; but in the low regions round Astrakhan and the Caspian Sea, this term is likewise applied to all dry islands, or barren tracts of land, which project above water.

banks: they conducted us into the Rytsha, thence into the Kortubinskoi Ilmen, and at length into the Bufan. Having crossed this prodigious and extensive branch of the Volga, which the rising water had increased, we steered in a direct line to the city of *Krasnoi Yar*, where we landed at eleven o'clock at night.

On the 6th of May it rained so hard, and the weather was so tempestuous, that we found it impossible to continue our voyage, and reach the opposite steppe. A short interval of fair weather permitted us, with difficulty, to visit the environs of the city, and inspect the saltpetre beds, as well as the lixiviated nitrous hills, which run in an eastern direction, and are adorned on both sides by the most beautiful orchards. This nitrous field appears to have been a cemetery of the ancient Tartars; an opinion which is corroborated by numerous fragments of bones and whole human skulls, mingled in every direction on this soil. *Sumerkent*, the antique Tartar town, which Rubruquis, or Ruybroek, the monk, in his forty-ninth chapter, states to have been situated in an island at one of the mouths of the Volga, appears to have stood in the environs of modern *Krasnoi Yar*; for soon after we find *Astrakhan* mentioned under the name of *Citrakan*, in the low country of the Volga. — Not only in the environs of *Krasnoi Yar*, but also on the two isles *Kobyli* and *Vatashnoi Bugor*, situated in its vicinity, on the uninhabited places called *Krasnye Yari*, or red banks, near *Altsha*, on *Karaulnoi*, *Kirpishnoi*, and *Mayashnoi Bugor*, traces of stone-buildings are frequently discovered; and large bricks are often dug up, of which the boors build their stoves. The whole *Mayashnoi Bugor*, which is separated from *Krasnoi Yar* by

the Ogorodnoi Yerik, or, garden ditch, and from Kirpishnoi Bugor, or, brick isle, by Kirpishnoi Yerik, or, brick ditch, is appropriated either to gardens or a cemetery, and is full of ancient Tartarian tombs. Other dry isles adjacent, such as Bugri Danilovye, Kobluiszkoi, Tshertofskoi, Parshikofskoi, Kandakofskoi, and Kobylinskoi, though they have no remains of brick buildings, yet vestiges of a former population are everywhere visible.

The nitrous earth of this country is a reddish sandy marl, or sand mixed with clay, and interspersed with pieces of bone. It would be necessary to mix dung or urine with it, in great quantities, to prepare a good compost for the production of saltpetre, in walls or beds which might afford a sufficient supply for a small saltpetre-work. At this season there was but a very slight efflorescence on the lixiviated earth — The only plants which thrive on these nitrous beds are the *Ceratocarpus*, *Ranunculus falcatus*, *Lepidium rudemale* and *perfoliatum*, *Scorzonera laciniata*, *Hyosciamus niger*, *Secale prostratum* and *villosum**, *Sisymbrium*, *Loeselia*, and *Sophia*, *Asperugo procumbens*, *Lycopsis vesicaria* and *Cynoglossum*. Various species of *Salsolæ*, *Polycrema*, *Atriplices*, and the numerous *Messerschmidia*, put forth their buds.

Krasnoi Yar is built on the bank of the Busan, in an island formed by the confluence of that river with the Akhtouba and the Algara, another branch of the Volga. It is intersected by several small canals; for instance, those of Mayashnoi and Ogorodnoi Yerik. Part of this isle is inundated at high water;

* *Secale prostratum*. PALLAS's Travels, Part i. Supplement, page 485. N. 99. *Triticum pumilum*, Lin. Sup. Plant, p. 115.

and then the streets of even the higher parts of the town are overflowed. At such times travellers can proceed in boats directly to Astrakhan; and by this way the distance is only thirty versts, and sometimes even less. On the contrary, when the waters are low, and especially when the wind blows towards the sea, and propels them outwards, travellers are obliged to make a considerable circuit up the Akhtouba, by which the voyage is protracted to seventy versts. It is the same in winter, when the ice is broken by the sea-winds, and thrown up on the other side of the isles: besides these inconveniences, a similar circumstance happens when the water from the sea inundates them, and thus renders the direct road impassable.

This city is of an oblong form, and intersected by a principal street: it contains about three hundred houses, a stone-church, sufficiently large for the population of the place, and one of wood. The garrison consists of one hundred infantry, whose commander ranks as a staff-officer, and one hundred Kozaks. The inhabitants are either merchants or fishermen: consequently there is a great want of mechanics. The wooden fortifications of this place are totally decayed, except two turrets; and the means of defence at present consist of chevaux de frise and two open batteries. The gardens of the inhabitants are particularly celebrated for delicious autumnal pears, called *Duli*, and for their apples, among which are a remarkably large species, and another which they call *Mamutofskye yabloki*, or the Boukharian fort. The gardens likewise produce a very large species of white onion, which is much esteemed. These fruits, and fish, are the only traffic of the inhabitants, who convey them in boats to the market of Astrakhan, where they are
advan-

advantageously fold, so as to produce annually from six to eight thousand rubles.

Krasnoi Yar was built in the reign of the Tzar ALEXI MICHAILOVITSH, and seems to have been intended to check the excesses of the hordes of pillaging Kozaks, who make inroads from the Bufan to the Caspian Sea; while it also serves as a barrier to Astrakhan, against the Kalmuks, especially in winter, when they may proceed over the ice from every quarter towards that city. Even at the present day, as the Kirghis have, since the year 1774, obtained permission to winter annually in the steppe on this side of the river Ural, as far as the Volga, it would be advisable to establish some fortifications for the security of this place. The inhabitants, however, suppose themselves perfectly safe, and have built a small suburb even on Mayashnoi Bugor: the only access to which is by narrow footpaths of planks, which have from necessity been substituted for bridges.

On the 7th of May the weather was fine, with a mild and constant breeze from the South-West. On the morning of that day we sailed a small way up the Bufan, and entered the Akhtouba, which flows into it. We then proceeded up that river, and passed the mouth of the Algara to Krasennaya Prorva, a narrow canal, the dry banks of which were covered with beautiful willows and poplars. From this place we continued our course to the vast lake of Tshernoi Ilmeen, that extends farther than the eye can reach, though its depth in no part exceeds three ells. We sailed over this lake principally N.E. and E. till we entered the Karduvanka, and thence passed into the Kigatsh, which flows along the more elevated opposite steppe, and forms the easterly arm of the Volga.

When

When we landed near Studentzova Vataga, a rendezvous of fishermen on an isle of the Kigatsh, we found the horses ordered for us, and an escort of Kozaks appointed to conduct us to the steppe, near the advanced post of Kapitan'skoi, a place belonging to the cordon lately established.

This military cordon has been organized to act against the Kirghis. Hordes of those banditti in winter prowl as far as the Volga, along the shores of the Caspian Sea, and to the sandy desert of Naryn, where they commit numerous petty depredations. The Kozaks also patrol for the security of the fisheries, and solitary farms along the shore, or on the isles of the river: they are strongly reinforced in winter by Kalmuks, when the Kirghis are approaching, or retiring. The posts of these troops, which are intended to furnish continual patrols, are, computing from the sea, established in the following places :

Near Kulpinskoe, a fishery situated towards Guryefgorodok.

Near Yerzhova Vataga, ten versts from the latter place.

Near the fishery, and in the environs of Kassalgan, thirty-five versts farther, and about half-way from Guryef, which is computed to be five hundred versts distant from Krasnoi Yar.

Near the point of land called Belushinskaya Kofsa, nineteen versts and a half.

Near a nameless gulph of the Sea, seventeen versts from the point of Beluga, or the great sturgeon.

Near the farm Bakaef, seventeen versts.

Near the small lake Erke-Aman, eighteen versts.

Near the fishery of Telepnes, the merchant, nine versts.

Near

Near Severnoi, eleven versts and a half.

Near Budak, or Baideë, fourteen versts. Here the line leaves the sea-coast, and extends itself towards the source of the Kigat, and the Akhtouba.

Near the salt lakes Ledänetzkye, sixteen versts.

At the Kigat, or the extreme collateral branch of the Volga, nineteen versts and a half.

Near Temähn-Noor, or lake of the camels, three versts and a half.

At Bereket, a canal adjoining the Akhtouba, where the cordon joins Krasnoi Yar, sixteen versts.

Farther, above this place, are the following stations :

Near the Tartar village Saitovka, fourteen versts from the post of Bereket.

Near Neverova Vataga, five versts.

Near Byeloi Metshet, a Tartarian house of prayer, ten versts.

Near Dolotchan, thirteen versts and a half.

Near the Tartarian house of prayer, Urak-Mullah, fourteen versts and a half.

Near the Ashuluk, a collateral branch of the Akhtouba, thirteen versts and a half.

Near Selitränoigorodok, fourteen versts.

On the height of Kharabali, eighteen versts.

Near Skvortzof Yaar, or bank of the starlings, ten versts.

Near the Tshapurie Osero, or lake of the kite, twelve versts.

Near the water Saffikol, seven versts and a half.

Near Manchaliniskoi Yaar, ten versts.

Near the Akhtouba, eleven versts and a half.

Near

Near Solotukhin Yaar, nine versts.

Near Sikerta, or properly Settertä, eighteen versts.

On the Bulgumskoi Bugor, eleven versts.

Near Yablonnoi Yaar, or bank of apples, fourteen versts.

Near the bank Silgan, thirteen versts and a half.

Near the village Volodimerovka, in a direct line opposite
Tfhernoiyyar, eleven versts.

In the Kurkina Balka, thirteen versts.

Near an angle of the Akhtouba, sixteen versts.

Near Nefnaemka, eleven versts.

Near the rivulet of Zarevka, eleven versts.

From this place the cordon extends to the government of Saratof, thence across the steppe to the small lake of Altan, or Elton, along the road by which salt is transported to Targun, and N. E. to the small fortress of Ufenkaya. This fort has been built since the year 1788, according to a regular plan, with parapets and bastions, on the right bank of the great river Ufeen, below Solanka, the third brook which empties itself into that river. The place, with the exception of the garrison, contains only about one hundred inhabitants.

At each of these posts eight or ten Kozaks, with a Desätrick, are stationed; and reinforced in winter with ten or twelve Kalmuks. At the greatest distances, for instance, towards the sea, near Krasnoi Yar, Selitrenoigorodok, near the Akhtouba, above Mankhali, and near Kurkina Balka, there is also a corps de reserve of twenty or thirty Kozaks, and sixty Kalmuks, commanded by a Kozak officer, and ready to assist the sentinels on any emergency. At Volodimerovka there are twenty
infantry

infantry stationed, with a small train of artillery; and there are an officer and thirty imperial dragoons of Astrakhan stationed at each of the posts of Krasnoi Yar, Bereket, and Saitovka.

Karduan'skoi Ilmen, where we landed, and near which we rested this night, is a bay or lake into which the Kigat'sh flows, and whence it again issues. A guard is stationed on the shore of this bay, on account of the salt lake in the steppe called *Karr-Duan*, a compound word of the Tartars from *Karr*, which signifies snow, and *Duan*, thaw; and the place has received this appellation because the snow soon dissolves on the high sandy steppe.

The salt lake of this place does not contain a pure sea-salt, but deposits a sediment, which consists of an intermixture of common and Epsom salt. It is made by a contract with the apothecaries of Astrakhan, who prepare from it, for all the Russian druggists' shops, what is called *Sal Astrakhanense*, and magnesia. This lake is above half a verst distant, E.S.E. from the bank of the Volga. It lies beyond the elevation of a flat steppe, and appears, as it were, inclosed in a basin formed by the gradual declivity of the surrounding parts of the desert. This very smooth and shallow lake is not more than an arshine deep, and the steppe rises about a fathom higher than its surface. It is oblong, and extends in a serpentine form, being about four hundred fathoms in length from S.E. to N.W.; but scarcely sixty fathoms broad. From the S.E. border of this lake, a narrow valley, situated somewhat higher, extends in a western direction for twenty-five fathoms, when it grows wider, and declines

declines into a saline marsh, about seventy fathoms from E. to W.; and with certain winds it is inundated with the salt water of the lake. This saline marsh, as well as that of the lake, is like the black, hepatic, and fetid mire usually found in all salt pools. In dry summer weather there is an incrustation of salt and sand formed of different degrees of thickness, the upper part of which is sea-salt, and under it a kind of Epsom salt; both are imperfectly crystallized. Perhaps this phenomenon may be attributed to the premature precipitation of the Epsom salt, which more readily assumes the crystalline form. In consequence of the considerable quantity of the late rains, the salt which had been nearly crystallized was for the greatest part again dissolved. At the bottom of the lake, I found a stratum of loose marine salt in irregular angles, and easily soluble; which in a manner constituted one half of the lixivium.

The marine plants which I found upon the edge of this lake, were the *Nitraria* in spreading bushes, the *Salicornia strobilacea* and *foliata* in an erect state, and the *Frankenia hirsuta*. On the higher parts of the steppe I observed the *Astragalus tragoides* and *alopecuroides*, *Ephedra monostachya*, and *Axyris ceratoides* in large bushes, the *Hypecoum pendulum*, the *Cheiranthus nitrarius**, and the *Ranunculus falcatus*.

On the 8th of May, in the morning, I made an excursion on horseback farther along the *Ledänetzkoï Yerik*, or ice-ditch, a spurious branch of the river which runs from the Kigatsh

* *Cheiranthus*, an littoreus? PALLAS's Travels, Part ii. Supplement, p. 741. N. 115. Plate k. Fig. 2.

into the steppe. Near a place call Ledänetzkoï Priftan, where the boats are loaded with salt, I found a station of the fore-mentioned cordon, and a guard for the salt-works. About one hundred fathoms farther into the steppe, I observed, in low ground, a large, oval, saline lake, about two hundred fathoms in diameter. In this lake the salt had begun to form a loose, granulated incrustation, which the rain had partly dissolved.

From Ledänetzkoï Osero, or the ice lake, from which the above-mentioned water takes its name, we continued our journey on horseback about three versts to the N. W.; and after having passed a spurious branch of black, muddy, and fetid water, in stagnating pools, we arrived at the *Byelye Osera*, or white salt lakes. These two lakes lie near each other, are less than a verst in diameter, and are separated from the fetid water only by a gentle elevation. The lake towards the South is of an oval form, and about one hundred and sixty fathoms long; the other, which is nearly one hundred and forty fathoms distant from the former, is, as it were, composed of two; a small oviform one, eighty fathoms in length, and a larger one, rather winding in a direction from N.W. to S.E. and three hundred fathoms long. They are connected by a narrow and marshy soil, and even at this early season deposited a common salt. The marine plants here are similar to those last mentioned. We rode along the before-described arm of stagnant water, and after passing near Karr Duan, which we had visited the preceding day, distant about four versts from the white lakes, we returned to our quarters.

There are three small salt lakes on a flat isle, inclosed between the arm of water called Karr Duanskoi and the great Algara,

and intersected by another branch of water named Yerik Mukhomar, but which I could not visit for want of a boat. Two other lakes, called Teplinskye Osera, lie contiguous to each other, above Mukhomar; and a third lake is situated below that branch. In consequence of the produce of all these saline lakes, magazines for salt have been erected on the high ground of the small Kobylin Bugor, between the great and the little Algara.

I will not decide here, whether these lakes are supplied by salt springs, or are only places which remained filled with salt-water after the sea had retreated. Their situation, however, in extensive flat grounds, capable of containing much salt-water, which afterwards collected in the deepest cavities, renders the latter supposition probable. On the other hand, the different qualities of the salt of the neighbouring lakes, the remarkable difference of their saline impregnation, and the various springs of saline or brackish water, which we found on digging wells in the Caspian steppe, tend to corroborate the former conjecture. In either case, the salt which is discovered throughout the steppe, is derived from the sea that formerly covered it, and the vestiges of which are still perceptible.

On my return I found that the Tartar guide, who was to conduct me through the dry steppe, had arrived. Meanwhile I had been informed by some old Kalmuks, that we should find in this country a remarkable mountainous tract, called Arfagar, at a considerable distance from the Volga; and that it contained several species of gypsum, and a peculiar rock-salt called *Moril Dabassum*: independent of my botanical researches, in a rocky country and southern climate, where I might expect to find many

many rare plants, my intention was likewise to discover this salt.

The country of Arfagar was familiar to my guide, who formerly had frequent intercourse with the Kalmuks, and at present with the Kirghis: he consequently knew every noted place on the steppe. But instigated by the lieutenant who commanded my escort of Kozaks, and who was unwilling to accompany me on such a dangerous journey through the desert, he would not tell me the truth. After many unavailing solicitations, I was at length obliged to brave the obstinacy of these people; and, with a compass in my hand, I undertook my journey on the steppe against their will. After the vague description which had been given me of the environs of Arfagar, I demanded a decisive answer whether they would endure thirst as well as myself, or conduct me by the right way from spring to spring.

I then ordered our water vessels to be filled, and after dinner began my journey. We first passed two oblong lakes of pure water, in basins formed by Nature, and then proceeded a short way up the Kigatsh. We afterwards passed the saline lake Tzatzek-Nor, and observed on its shore a house of worship constructed of wicker-work, and a cemetery of the Kundurian Tartars, on an eminence. We then came to a small bay formed by the Kigatsh, and called Kigatzkoë Ilmen; and thence travelled to another detached bay, called Temahn Nor, or lake of the camels; where a party of troops is commonly stationed. After the horses had been watered, we travelled directly N. E. into the steppe, which gradually rises, and soon becomes more sandy. Proceeding four or five versts farther, we arrived at a long,

long, dry, salt-marsh, which extends in a N. E. direction : an old Kalmuk-road runs along this marsh, and joins the patrol road of Temähn-norskoi Karaul. In the neighbouring sand-hills, deep wells had been sunk, and we observed that the sand thrown up was intermingled with shells.

After a march of an hour and a quarter, we observed on our right, two small oblong salt lakes, which were separated by an eminence. These lakes at this time contained a small portion of marine salt, yet in spring their waters are not unfit for the use of cattle. They resembled the flat basins of the higher steppe ; and nearly all the salt-pits or saline lakes of this low country were of a similar appearance. A little farther on we found another salt-pit, in a direction from East to West. Twenty-four computed versts from the Volga I pitched my tent for the night, on a sandy soil, near two old ditches ; and immediately ordered an attempt to be made to obtain water. After sinking a well to the depth of a fathom and a half, we discovered wet sand, mixed with particles of selenite, in the form of lentils ; soon after we found water, of a brackish, bitter taste, which frustrated our attempt. The horses were obliged to be satisfied with the dew of the night, as their only drink ; and, at the dawn of day, I ordered a trusty soldier on horseback, accompanied by a Kozak, and my guide, to set out for the first sandy hillocks of *Saltan Murat* ; with a view to seek for fresh water, and to purify the wells, which I was certain could not be far distant.

On the 9th of May we continued without water till one o'clock in the afternoon, when our messengers returned and brought us good news, to the great disappointment of the commandant

mandant of my escort. During these transactions, the escort was relieved by another detachment of Kozaks, commanded by a lieutenant who belonged to the garrison of Saritovka, and I then found myself disengaged from an obstinate and useless conductor. My new guide, Mr. Golubief, was a reasonable, modest man, and a lover of order; he behaved with the greatest politeness and attention during the remainder of my journey over this inhospitable region, through which he had himself many times travelled. When we were informed that good springs had been discovered at Saltan Murat, we travelled expeditiously the twenty-eight versts to that place, where we found the water already purified. The steppe continued uneven, and contained dry, circular salt-pits, till we arrived at a lower plain, richly covered with grass, intersected by pits, and diversified with sand-banks, where, properly speaking, the country of Saltan Murat begins.

In the course of my travels I have met with few countries of so uniform an appearance as the steppe over which I passed in these low regions of the Volga, towards the East and West. It was almost destitute of vegetable productions, except a few peculiar and rare plants, of which a particular account shall be given. On all sandy parts of the steppe, the plants are different from those which grow on a clayey soil, or on dry and saline plains; and the latter are the most naked and wretched spots in the whole empire.

The sandy and more verdant part of the steppe produced abundantly the *Stipa pennata*, or feathergrass, which the horses ate with avidity, and other tufted grasses, such as the *Festuca ovina*, *Bromus cristatus*, *Triticum junceum*, *Poa vivipara*, *cristata*,
Aira

Aira caryophylla, and the like. Besides these we frequently met with the *Euphorbia Esula*; and in some places the *Achillea tomentosa*, *Antirrhinum fragrans*, *Cheiranthus montanus*; here and there the *Carduus cyanoides monoclonos*, *Scorzonera eriosperma**, *Elymus arenarius*, *Astragalus tragoides*, *tenuifolius*, and a diminutive variety of the *Senecio Jacobaea*, which bloomed close to the ground. In some detached places the *Astragalus alopecuroides*, *Onosma echioides*, *Tragopogon orientale* and *croci-folium* flourished: and where the concealed saline springs moistened the sand, we observed the *Salsola prostrata*, together with the *Artemisia maritima*, and *austriaca*.

To the plants above-mentioned may be added those which appear in summer, such as the *Corispermum hyssopifolium* and *squarrosus*, *Tribulus terrestris*, and *Salsola kali*. On the other side of the hillocks of drift sand, and on the argillaceous steppe, I found, though thinly scattered, the plants peculiar to such tracts, which I shall in future mention more particularly. Of the animal kingdom, I observed, in some places on this steppe, the *Ardea virgo*, the *Otis Tarda* and *Tetrax*, *Alanda nigra*, *Calandra arvensis*, and *cristata*, a few mountain mice, and the *Mus Jaculus*; but I saw in greater numbers the *Lacerta velox*, and the courageous *Coluber Jaculator*, or, as it is called by the Russians, the *Sheltopusik*. This reptile, which is not venomous, is often six feet long; it moves about with an erect head and breast, and when pursued defends itself by darting against the horse and his rider. There are likewise two other species of reptiles, the *Berus*, and *Halys*, both of a poisonous nature.

* PALLAS's Travels, Part i. Supplement, p. 457. N. 12.

The springs beside Saltan Murat, where we passed the night, had been found in the cavity of a sand-bank. My people discovered two other springs, at the depth of four arshines, whence excellent water flowed in abundance; so that being favoured with a gentle eastern breeze, which had prevailed for two days, and ushered in mild spring weather, we passed a very agreeable night here, and were entertained by the notes of the lark. On the sandy hillocks which produced the reed, and bushy *Artemisia*, I observed the biting *Lacerta mystacæa**, and a pretty little lizard, somewhat similar to the forementioned animal, but without whiskers, and which, when alarmed, rolls its tail upon its back. I likewise saw various and numerous insects already described.

On the 10th of May, I resolved to leave the greatest part of my escort near these excellent springs, and proceed farther into the steppe, accompanied by my designer, M. Geissler, the student of Pharmacy, my guide, and two Kozaks; in order that, if we should happen to be distressed for water, we might be able to send for a new supply.

My guide continued to advance towards the East, in a direct line, to which these people are so well accustomed. We observed in different places some small salt-pits, and several pools, partly filled with drifted sand and overgrown, on a hilly and verdant steppe, interspersed with a variety of sand-banks, and productive of herbs, among which were, a little wormwood, and some yellow milfoil. After having travelled about seven versts, the steppe became level, and we found on its

* PALLAS's Travels, Part iii. Supplement, page 702. N. 36. Plate 5. Fig. 1.

sandy soil several large tufts of the *Iris juncifolia* in blossom. Six or seven versts farther, the steppe again has a wave-like surface, with several dry salt-pits, and one containing salt water. On the right, we saw at a distance some banks of sand, near one of which we stopped to dine, and observed the *Torloc*, or *Pallassia*, growing in single plants.

Behind these sandy hillocks we passed close by several salt-pools about half dry, the second of which was the largest, and more impregnated with Epsom salt than the rest; the fourth lay directly in our road; and we again noticed sand-banks at a distance. After travelling three versts and a half farther, we perceived several small salt-pits, in the form of a basin, and one in the form of a horse-shoe, about twelve versts from the place where we had stopped to refresh ourselves and feed our horses.

After travelling an hour, or six versts farther, we arrived at some hillocks of a sandy and firm clay, which my guide called *Saassik-Shoogot*. The plants growing here indicated the dry, sterile, and argillaceous soil on which they commonly thrive. The *Anabasis aphylla*, in particular, was very small and creeping; the others, as the *Artemisia contra*, and *maritima*, and the *Ephedra*, were abundant and flourishing. Besides these we saw that enormous large plant the rhubarb* of the steppe, or *Rheum Caspium*, which also embellishes this barren region. The mother-root of this plant was in many places as thick as a man's arm, and each of the three leaves which grew close to

* PALLAS's Travels, Part i. Supplement, pp. 380, 381. "I am still more decided in opinion that our rhapsodic, or rhubarb of the steppe, is no other than the *Rheum Ribes*, collected by RAUWOLF, on Mount Lebanon."

the ground, was frequently upwards of an arshine and three quarters in diameter, and four arshines or upwards in circumference. Among these inflated and much wrinkled leaves, which are similar to those of the white curled Savoy cabbage, the *Coluber Berus* was frequently concealed; we also found here the caterpillar *Phalæna aulica* in great numbers. The *Ulva Nostoc*, and the *Lichen terrestris* were numerous in these regions.

We left these gently rising hillocks on our right. On the summit of the first, there is a sepulchral mount, overgrown with several old and large plants of Rhubarb, and surrounded by a trench. The hillocks are environed by salt-pits, but beyond them the sandy steppe is interspersed with a few dwarf shrubs of Tamarisk, with very short catkins; and the *Ephedra monostachya*, which was not yet full-blown, grew here in great abundance. About ten versts from the abovementioned hillocks we arrived at a sand-bank, from which issued several very good springs that had probably been purified or cleansed by the Kirghis, at their departure from this country, in the present year. We resolved to pass the night at this place, where the Torloc, or *Pallassia*, was very common. The cavities between these hillocks served in winter as places of shelter for the camels and sheep, and were nearly filled with the dung of those animals. On the pasture ground we found in abundance the *Scarabæus Ammon* *. Towards the N. E., but at a great distance, we descried several large sand-hills, which probably belong to the chain of Naryn, or Rynpeski. Three other

* PALLAS's Travels, Part i. Supplement, No. 22. Part iii. Supplement, page 707. No. 50. Nov. Spec. Insector. Tab. A. Fig. 8. AB.

hillocks, which my guide called *Bugly Shoogot*, were situated to the S.S.E.; and those which produce the rhubarb aforementioned, were to the S.S.W.

On the 11th of May, in the morning, we set out with a mild East wind; but our guide perceiving that we travelled too far towards the East, we changed our route, and proceeded more to the N.W. The steppe became progressively more mountainous, and at different places we observed salt-pits unconnected with each other. The surface of the soil was covered with a variety of grasses: the country in general appeared to rise, and presented an uninteresting uniformity of surface. At the distance of twenty-four versts the steppe became still more hilly, and had numerous deep pits, like covered wells, but too large to be considered as such. The Consistory Counsellor SILBERSCHLAG would probably have conjectured these pits to be the craters of extinguished volcanos; but I believe them to be cavities where the surface of the earth has given way, in consequence of subterraneous streams of springs having washed away the salt, or gypsum. Perhaps this country would deserve to be searched for rock-salt; though I had neither miners nor instruments for that purpose. We travelled ten versts farther through this rising, uneven country, when we suddenly came in sight of a vast and barren plain, and at the distance of about a verst and a half we observed several white hillocks of gypsum.

The soil of the tract over which we travelled in a southern direction to these hillocks, was unlike that which we formerly met with; being a mixture of marly gypsum and white clay, which produced several rare plants of a different species

species from any I had before observed in the course of my journey.

Although the atmosphere was cooled and agitated by the wind, we felt an insupportable heat on approaching the hillocks of gypsum; a remark which I had before made in all my botanical excursions to these places, even when there was but little sunshine. The refraction of the solar rays from a white soil, and the numerous hollow and spongy surfaces which concentrate and increase the heat, and with which this country abounds, appear to be the cause of this phenomenon.

On my arrival, my first care was to procure water, which is uncommonly scarce in this selenitic, and, in many respects, remarkable country. I dispatched our guide, together with the Kozaks, to a sandy country, at a short distance westward, known to the Kalmuks by the name of *Khonggor*, in order to search for and purify springs. As I also foresaw that I should be employed for several days in attentively observing these regions, and the plants they produce, I ordered my guide, after he had discovered the springs, to take the direct road to our people whom we had left near Saltan Murat, and conduct them to us.—Both objects were accomplished agreeably to my wishes.

After a fatiguing day, which, notwithstanding the heat, I employed in surveying the selenitic hillocks, without resting a moment, and being encouraged by the discovery of new and beautiful plants, I pitched my tent for the night, near the purified springs about five versts westward of those hillocks. In the course of the evening the wind changed to the N.W. and brought on a little rain. On the 12th the sky cleared up, and

we

we had some sunshine; the wind, however, shifted to the N.E. On the 13th, in the morning, there was more rain, and a cloudy atmosphere. In the afternoon of the same day our people, whom we had left at the springs of Khonggor, arrived; and I employed this and the following day in collecting plants, examining all the hillocks of gypsum and salt-pits in the vicinity of this place.

Arfagar, or, as the Tartars call it, *Ak-kala*, or the white city, stands on a gently-sloping height, which rises gradually for several versts; it is about eight versts in circumference, and nearly oval. The declivity of this elevation is a sandy steppe, covered with verdure, except on its northern side, where the soil is more saline and argillaceous. When we approached these hillocks of gypsum, which did not strike the eye till we came close to them, because of their extreme steepness, as well as the inner surface of their basis being arched, we observed several sinkings of the earth, and pits which usually presented rocks of gypsum, and sometimes gulphs and clefts. In every direction we remarked spots which produced scarcely any plant but the variegated Lichen; and the soil of these spots consisted of a hollow-sounding gypsum. Even the base, around which cliffs of this fossil were scattered on the southern side, generally presented a clayey surface, mixed with gypsum, and overgrown with moss. On the northern and inner parts between the hillocks, the soil is sandy, and produces good grass. The southern base beforementioned has several very considerable cavities, some of which are dreadful perpendicular gulphs, and others run obliquely: in the latter a solid alabaster

is occasionally found. This oval and somewhat obtuse summit of the eminence, which is surrounded by about fifty cliffs of gypsum of different sizes, is five or six versts in diameter, and runs in a longitudinal direction from North to South. The middle of this eminence is overgrown with the *Stipa juncea*, and the *Axyris ceratoides* with a high stem; and I also remarked, at different intervals, several sinkings of the earth, one of which appeared to have lately taken place, and exhibited a thick stratum of sand, around the edge of the gulph. W. N. W.

From the summit of these rocks of gypsum, at the greatest extremity of North and East, I perceived that the open and level surface extended towards the E. N. E. and S. E. From the W. N. W. to the N. E., at the distance of several versts, as we proceeded by a gradual descent over the dry steppe, we observed extensive saline tracts of various forms, overspread with the usual marine plants, among which the *Statice suffruticosa* was the most numerous. On this steppe we again remarked many sinkings of the earth, one of which presented a solid alabaſter. At a distance of about five versts on the western side, we arrived at the sand-hills of Khonggor, where we found good pasturage, and wells in the circular cavity of a sand-bank. In the subsequent autumn, I sent Mr. DOKUT-SHAEF, the master of the school at Astrakhan, to this country to collect the seeds of rare plants. He discovered farther northward a district of a similar soil, and some sinkings of the earth, one of which formed a cavern. About twelve versts from Khonggor on the northern side, he found in a country of a firm clayey soil, a deep and abundant spring which was surrounded with wicker-work, and provided with a trough of gypsum.

gypsum. He also observed a great diversity of sloping dells, in which there appeared several species of gypsum and some alabaster; whence it clearly appears that this tract extends as far as the rock-salt of Tihaptshatshi.

Among the selenitic hillocks of Arfagar, I met with some of a larger, more elevated, and partly oblong form, which are a different kind of mountain. One of these is situated N. E. at the extremity of the whole ridge, and the other at the W. N. W. The first is the highest and most considerable, being nearly two hundred fathoms in length, and rather steep. It has on its summit two large and two small knolls, the latter of which lie between the former, and resemble the sepulchral hillocks. This ridge extends from N. N. W. to E. S. E. and the knolls are in the same direction. The figure of the mountain, independent of the hillocks on its top, is an oval spheroid, which rests on another oblong, though more even base. This extensive base, and the mountain itself, as far as the highest eastern knoll, are covered with small, black and white, lenticular pebbles, which must have assumed that form under water. On the summit of the ridge, I found the bivalve shells of the Caspian Sea, in a good state of preservation; a proof that the waters of the Sea formerly covered the other selenitic rocks, as well as this eminence that rises from twelve to thirteen fathoms above its base.

This ridge, on its southern side, at about two-thirds of its height, but still more distinctly towards the western end, presents strata of a partly soft, grey sand-stone, lying almost on its summit, and deviating only fifteen degrees from the perpendicular line towards the South. The side of the mountain, where

this sand-stone is visible, becomes somewhat more steep, and is covered with grass and herbage towards the bottom. The stone forms a stratum of an arshine in thickness, about the middle of the mountain; on ascending farther, it gradually decreases to only an inch and a half thick; and at the uppermost part it assumes a clayey appearance, and is not thicker than a common pasteboard. The thick strata decline in a less perceptible degree, and stand almost rectangular. On its upper part, this mountain consists of corroded gypsum, intermingled with felenitic plates, which will be described when we come to the smaller cliffs. On the northern side, lamellated gypsum first presents itself on the surface. The western side, where the ridge begins to decrease, exhibits thin beds of schistus similar to those before described: they take a serpentine direction down the side of the mountain, in strata of seven arshines thick towards the W. N. W. In some places they form cavities, or clefts, filled up with a dun hepatite of the spath kind, which effervesces with acids, and emits during its ebullition a strong scent, similar to that of petroleum. This spathy hepatite is also found in considerable lumps, and sometimes intersected with white veins, between the strata of sand-stone and those of lamellated gypsum, on the upper part of the hillock towards the East.

From the summit of this ridge, we beheld the saline tract towards the North, and the whole group of felenitic hillocks and cliffs. Several elevations appeared in the north-east region, on the extremity of the level steppe, and were separated by an extensive plain. Some heights intervened, partly in an eastern and partly in a direction towards the north-east. The whole number amounted to nineteen hills, besides twenty-

nine of a smaller size, which we observed between the S. E. and S. S. W. scattered at a considerable distance from each other.

On the top of this mountainous ridge, I found a low, variegated *daffodil*, with broad leaves, winged capsules, and a plurality of flowers, but which were faded: the bulbous roots of this plant, which I preserved, did not produce flowers. This circumstance I the more regretted, as I had never before met with it, and as it was indisputably a non-descript.

Among the hillocks which lie to the S. E. of the former, there is one, on which the schistus appears in thin lamina, running in a southern direction. These lamina are covered with a corrosive efflorescence consisting of a mixture of Epsom and common salt.

The most distant hillock towards the S. E. is a long ridge of gypsum, extending from North to South: it is high and rocky, so that from the S. E. to the North, excepting a few small cliffs, nothing but an uniform dry steppe is perceptible.

Among the western hillocks there is a second ridge, higher and longer than that before described; it is about ten fathoms high, and consists of a sandy schistus, between layers of gypsum. The strata, some of which were serpentine, ran in a N. W. and S. E. direction, terminating abruptly towards the East, in an almost rectangular form. Adjacent to this spot, there are two small hillocks to the South and North; they both contain this schistus, which is also found, together with flakes of gypsum, interspersed with clay, on some of the middle southern hillocks.

Another smaller ridge, at the distance of half a verst westward, evidently contains alternate layers of clay and gypsum.

But the oblong hillock, situated between the two before described, is more remarkable, as on its very summit the Kalmuks have sunk two shafts to discover lamellated selenite, or *Glacies Mariæ*, with which they whiten sheep-skins. On the top of this eminence, they have piled up several flat stones, intended as a mark to the miner. The mountain consists of a soft gypsum, interspersed with large plates of lamellated selenite, often several spans thick. Its side presents irregular horizontal layers, which in some places are of a wave-like form, and in others there appear broken strata of a solid, grey-edged alabaſter, in plates from half an inch or less, to two inches and upwards in thickness. The thicker layers are white, with parallel grey lines, striped at unequal distances: the thinner strata are grey, with dark parallel lines; but the former only are susceptible of a polish like marble.

The greatest part of these, particularly the southern hillocks, are steep and rocky; though many are of an inconsiderable size. They generally consist of a soft, white gypsum, which appears to have been corroded by sea-water, as it is porous and imbibes water like a sponge: this fossil is not completely saturated, and in some places effervesces with acids. Its cells and tubes extend, as is the case in *māandrites* or *madreporites*, in a parallel line from the surface; or it resembles a concretion of moss and roots. This substance appears originally to have been gypsum intermingled with lime; the supersaturated and soluble parts of which have been corroded by the sea-water which formerly flowed over it, or perhaps even by the gradual action of rain-water; while the calcareous part remained insoluble. This gypsum, which readily crumbles when exposed to the air, is generally found on the level soil, particularly at the foot of
T 2
hillocks

hillocks and on barren spots where the soil is a mixture of gypsum and marl, shaded by lichens of various colours. In several places fragments of selenite are discoverable, but they are seldom of considerable size, and never in regular crystals.

The face of this singular country is indeed not luxuriant, though it is very different from that of the adjacent steppes, and interesting by the production of some peculiar and very scarce plants. The prevailing shrub here was the *Axyris ceratoides*, more common and larger than I had ever before seen, being often above a yard high, and growing in thick bushes. The *Astragalus tenuifolius*, and *Salsola prostrata* appeared likewise of a considerable height: the *Ephedra monostachya* grew to a pretty large size in the valleys, but was dwarfish and curled on the mountains. A particular kind of wormwood with fine leaves was very general. The *Ceratocarpus arenarius*, *Cheiranthus nitrarius*, and a remarkable genus of the *Arabis*, with white blossoms, perhaps the *Hispida* of Linnæus, which I formerly, but very seldom, observed growing singly, flourished here, and the *Cheiranthus lacerifolius* * was one of the most common herbs that grew on these mountains of gypsum. It was sometimes a semi-shrub, was now in full blossom, and after sun-set exhaled a more agreeable odour than even the English gillyflower. Another rarity, the *Molluccella tuberosa* † and perennial *Biscutella* ‡ with red flowers, and thick esculent roots of the turnip kind, were found together on mossy places. I also saw a few of

* *Hesperis tatarica*. PALLAS's Travels, Part i. Supplement, page 497. Plate i. Fig. 1, 2.

† PALLAS's Travels, Part iii. Supplement, page 738. N. 101. Plate T.

‡ This plant, which is undoubtedly a new genus, has been by mistake inserted in the third part of my former Travels, under the name of *Biscutella didyma*.

the *Cachrys odontalgica*, and *Atraphaxis*. On the southern sides of all the felenitic mountains, and on the warmest and driest soil, I observed a particular kind of *Astragalus*, which grew abundantly in perennial tufts, with nervated leaves, in which the leaflet on the top was generally wanting; and this plant affords an agreeable bitter. The delicate *Vella tenuissima**, and two other new dwarf plants of the same class, grew contiguously. On the highest hillocks I saw the *Allium caspicum* † of a very large size; and I found a new species of *Scorzonera*, the *Gypsophila paniculata*, *Adonis verna*, *Fumaria officinalis*, *Euphorbia Cyparissias*, *Poa vivipara*, *Lithospermum*, *Lycopsis vesicaria*, *Sinapis rubella*, *Bromus tectorum*, *Tulipa sylvestris*, *Cucubalus viscosus*, *Onosma orientalis*, and *Astragalus alopecuroides* and *physodes*. These were the only plants then in blossom. In the latter part of summer, some species of *Salsolæ*, particularly the beautiful *Salsola oppositifolia* ‡, are likewise to be met with in this neighbourhood.

The springs of Khonggor, near which we pitched our tents for some days, lie towards the West, about five versts from Arfagar, beyond an open steppe, in a verdant and nearly circular spot which surrounds an oval sand-bank, overgrown with reeds. Two deep pits, and several shallow ones, had been dug in the lower and more western part of the ground; but they were filled with sand, so that we were obliged to sink two others, nearly two fathoms deep, to obtain water. These

* PALLAS's Travels, Part iii. Supplement, page 740. N. 103. Plate U. Fig. 2.

† Ibid. Part ii. Supplement, page 736. N. 105. Plate Q.

‡ Ibid. Part ii. Supplement, page 735. N. 103. Plate O.

springs first afforded sweet and agreeable water, but in less than twenty-four hours it became impregnated with a digestive and Epsom salt, and a small quantity of selenite, similar to medicinal springs supersaturated with alkali. Hence we could not quench our thirst with this water, as it had a debilitating effect, in proportion to the quantity we drank. It was not, however, remarkably purgative, nor disagreeable to the palate; for it was cold from passing through the sand. We could descry the hillocks of Arfagar towards the East and E. S. E.; from the North and N.W. the small elevations of the steppe; and towards the N.N.W., at a great distance beyond those heights, we saw a considerable mountain, which appeared to be that called *Tshaptshatshi*.—The *Mus arenarius* was common here, as also the pretty curled-tailed lizard. We frequently met with the scorpion of Arfagar, and sometimes the scarce *Tenebriones* of these countries. Serpents were not so numerous here as we supposed they would be, on a soil so full of cavities. We could not discover either foxes or wolves in this desert; but there were many porcupines with ears, which probably feed upon serpents and winged insects. I have seen one of these animals convoluted, except the mouth and claws, devour a living serpent by the tail, which could neither extricate itself nor make resistance.

On proceeding in a straight line from Arfagar to to Tshaptshatshi, we passed numberless salt-marshes and saline plains. The springs of Khonggor were in the western tract of sand, which extends from the vicinity of Tchernoyarsk as far as Saltan Murat, and its particular parts are distinguished by different names. This chain of sand-hills is connected by a sandy steppe, and

and the felenitic hillocks of Arfagar are united towards the S.E. by small eminences, salt-marshes, and a dry saline steppe, with the hillocks of Shoogot; and perhaps with the felenitic regions observable towards the sea, near Kaffalgan, as well as in the environs of Guryef. But towards the N.W. those hillocks of gypsum are joined to the mount of rock-salt called Tshaptshatshi. This mount is connected with that of Bogdo, at the foot of which lie a beautiful saline lake, and a very extensive field of gypsum. It is probable that the aforementioned hillocks form one series with the continuation of the salt-marshes called *Chaki*, and the saline rivulet *Tzurkhuli Garshoon*; with the country bordering on Lake Elton, which abounds with salt; as well as with the rivulet Solänka, that falls into the Urußan; and lastly with the river *Ufen*. This uninterrupted saline track reaches to *Obtshy Syrt*, a ridge of the steppe which extends to the Ural; it is intersected with salt-marshes, enters the western sandy region, and the vast tract of sand called Naryn, which is similar to the former, runs along its eastern edge, and extends beyond Lake Elton. Here the Naryn is broadest, and produces a variety of trees in low situations. Its southern extremity is said to be of a similar nature, and is called by the Kalmuks *Delte-modun*, being two days journey distant from the southern road of Orenburg, and one day's journey from Arfagar. The whole of this saline district may be considered as a bed of salt, formerly covered by the sea, and for the greater part dissolved, while the two tracts before-mentioned, appear to be sand-banks dashed by the waves against this mass of salt; for they contain a great number of

of salt-marshes and springs. If we may trust to the mensuration or *niveau* of Lake Elton, made in the reign of the Empress Elizabeth, the object of which was to cut a canal from the Volga to that lake, it, as well as the whole saline steppe, is much lower than the ordinary current of that river. Hence we may consider the cavity between these two sandy tracts as the deepest bed of the old sea, where salt has been copiously produced from the sea-water by evaporation. If this conjecture be well-founded, we may without difficulty account for the origin of the veins of water so easily discoverable in the sandy desert, and which probably arise from its low situation.

On the 15th of May, I left the springs of Khonggor. Our guide was of opinion, that we ought to quit the saline tract, and direct our march W.N.W. towards the western sandy district, in order to advance on the direct road to Tshaptshatshi, and thus be certain of a supply of water.

The sandy steppe at first presented small valleys in different situations, extending generally from West to East, and richly covered with verdure. The remarkable plants of this place were a species of *Carex vesicaria*, with its roots creeping along the surface, and the white *Asphodelus*, which is rather scarce. Of the plants common on steppes, I here observed the *Cheiranthus montanus*, and a beautiful *Antirrhinum fragrans*, both in flower. The *Achillea tomentosa*, *Tragopogon orientale*, and *Anthemis millefoliata* were beginning to blossom. We expected to find water in the low grounds, but the appearance of the *Sal-sola prostrata* and the grey sea-wormwood only afforded us
hopes

hopes of brackish springs. The wandering hordes, when in search of springs, are always guided by the appearance of these plants. During a journey of several versts, we passed various dry salt-pits, and one that still contained some water. The steppe now became level, and was infested with lizards and adders. After travelling twelve versts, we proceeded more towards the West, over a series of sand-hills, that extended N.W., some of which we had before descried at a distance. On the most elevated spots, we met with several pits, but only one of them was accessible, and its water had a brackish taste. The shrub torloc, or *Pallassia*, grew here, and was nearly in blossom.

We allowed our horses to rest, and afterwards continued our route at a slow pace, on account of the almost insupportable heat: after travelling about four versts, over several oblong sand-banks, we arrived at a sand-hill, which commanded an extensive prospect.

On account of the excellent spring which Nature has placed on the very summit, we recognised it to be that remarkable hill called by the Kalmuks, *Täfskenn*. Between this and the country of Saltan Murat, is an extensive and high sandy soil, known by the name of *Mukhor*; and towards the North is a succession of sand-hills, called *Bayann* and *Soonkhuduk*. The hillock of *Täfskenn* stands isolated on the plain, is several fathoms high, and has on its summit a circular cavity, three fathoms deep, which contains a well of four arshines perpendicular, where we found excellent spring water almost an arshine deep. The pleasure we experienced, on making this discovery for ourselves and our horses, may be easily imagined.

The reed *Nepeta graveolens* and wild hemp grew abundantly on the sides of this cavity.

Ten versts from Täfskenn, after travelling in a direction between N.W. and N.N.W., we arrived at a beautiful wave-like and very verdant country, where I observed the feather-grass particularly high and thick. Our guide supposed this country to be *Bayann*. About sixteen versts from Täfskenn, we passed the traces of an old caravan-road to Orenburg, which terminates directly at the Bereket, a branch of the Akhtouba, where the market of the wandering Kalmuk horde *Yäht* was formerly kept. We passed the old wells of this place, now mostly dry, except one that contained some saline water; and if we may judge from the nature of the plants which grew in those places, it is probable that all the others produce only similar water. Pursuing our journey ten versts farther to the N.W., we came to a road made by the cattle of the Kalmuks, on which the traces of the former passage of the horde were still visible in the beaten foot-paths. These conducted us to wells in the vicinity, where we pitched our tents for the night, in the midst of the steppe. — We found several springs here nearly surrounded with Tamarisks, among which were four of tolerably sweet but fetid water, in consequence of insects, and the spawn of toads, which had corrupted them. Necessity alone compelled us to drink of this water, after being divested of its impurities by filtration.

On the 16th, in the morning, we continued our journey mostly towards the N.W. and N.N.W. over a level steppe, till, after travelling about ten versts, we arrived at some small elevations,
from

from which we could descry on the right a long extent of sand-hills. These appeared to be the southern continuation of the sandy tract of Naryn, and induced us to conclude that we still travelled too far eastward. We had scarcely turned towards the West, when we arrived on an argillaceous barren steppe, and immediately discovered plants of a kind different from those of sandy regions; such as the sea-worm-wood, *Centaurea salmantica*, and *Astragalus physodes*. After travelling about ten versts over this steppe, we reached the upper road of the caravans of Orenburg, which I had formerly noticed in my travels during the year 1772. We saw the height of Tshaptshatshi very distinctly before us; and judged from its situation, that the wells of *Burlukhuduk* lay on our right: we therefore directed our route along the beforementioned road towards the N. E. and found them about a verst and a half distant.

It was obvious from the traces of water, that the low ground where these springs exist, had this year been filled up with snow-water to the edge of the high steppe. The grass in this place was still untouched, which convinced us that we were the first travellers who had encamped here in the present year. We saw great numbers of the *Cucubalus viscosus*, *Erysimum cheirantoides*, *Lycopus pinnatifidus*, *Abrotanum*, *Melilotus*, and *Lapathum*.

As our bread was almost consumed, and I was desirous of re-visiting the country of Tshaptshatshi, on account of its plants, a Kozak was dispatched with letters to Yenataevka, to procure the necessary provisions. I left the greatest part of my

escort at the encampment, and proceeded on the 16th to Tshaptshatshi, where I proposed to stay a night, and employ the following day in botanical excursions.

* * *

“ The Kalmuks, many years ago, discovered rock-salt on a small mountainous ridge in the middle of the steppe, elevated above all the other hillocks : and being accustomed to fetch this necessary article from that place, they called it *Tshaptshatshi*, which signifies the act of cutting with a hatchet ; and the ridge itself is denominated *Arfargal-Shoogot*, or the saline mountains.

“ In the vallies I observed several large pools of water, which swarmed with the *Falcinellus*, a species of black snipe, with a crooked, ensiform bill. At the foot of the mountains, we passed a shallow salt-lake, several hundred fathoms long, containing a small quantity of brackish stagnant water, which, towards the latter end of summer, is generally evaporated to dryness. On the N. E. side of the mountains we discovered, at a considerable distance on the steppe, two other lakes ; one of which we found to consist of pretty strong salt-water, while that of the other was fresh and sweet. The whole chain of mountains are about eight versts in diameter : they are divided nearly in a N. W. direction, by a saline valley, defended on both sides by rocky hillocks, with various windings and hollows. On our entrance into this valley, we met with a brackish pool, and farther, on a very saline soil, we found some pits which contained a tolerably potable water. Some green slopes of soil, as well as

the collateral glens of this valley, were covered with a beautiful *Clematis hexapetala*, or virgin's bower, with brown flowers, on which a rare species of bees were swarming. On some adjacent hillocks, calcareous slates, similar to those I noticed in other places, assumed a felenitic form, and presented, though rather sparingly, a lamellated felenite of a rhomboidal figure.

“ From this valley we proceeded to the left, over a small ridge, and arrived at a contiguous oblong and shallow salt-lake, which lies in a large circular cavity, about a verst and a half in circumference, and forms many small inlets. This salt-marsh was dried up, except a few pools: in its centre a wide but shallow shaft had formerly been dug, in a tough clayey mire, by order of Professor GMELIN, who had the misfortune here to lose his instrument. — This salt-marsh is situated in an oblique direction from South to North, and is surrounded by barren hillocks, some of which consist of felenite. In a small valley opening towards the dry part of the lake, at its northern extremity, and along the southern precipice of a considerable mountainous ridge, there are many ditches, several of which appear to have originated from the sinkings of the earth. Here the rock-salt forms a very extensive stratum, as beautiful and pure as crystals; it lies immediately beneath a bed of loam, intermingled with marine shells. In some of the other ditches, we could easily discover the salt lying near the surface of the soil.

“ The ground here is very uneven, and abruptly terminates with the mountain towards the dale. It would, however, be difficult to ascertain the extent and thickness of the stratum of
rock-

rock-salt, without a regular search by the miner; but there is no doubt that it extends to a considerable distance on this mountainous ridge. From the height where it is dug up, the mountains towards the North and East present numerous declinations of the surface, which have probably happened in consequence of the salt having been dissolved and washed away by rain-water. About three hundred and fifty fathoms from the mine, in the same direction, we found two small lakes, at the distance of several hundred fathoms from each other: one of these, towards the East, forms a deep natural basin, and is strongly impregnated with salt; while the other is somewhat more shallow, and only of a brackish taste.

“The western side of the mountains is very rocky, bare, and parched. On the summit are several sepulchral hills of a considerable size, formed of stone and earth. The whole country bears a great resemblance to the mountain of Inderk. The *Moluccella tuberosa* is indigenous on several of these mountains; and I likewise observed here the remains of the *Biscutella didyma*, and a great abundance of the wild rhubarb, which is common on the Tartar steppes, and the leaves of which, in their form and outline, are exactly similar to the *Rheum ribes*, described and represented by RAUWOLFF. The three species of plants beforementioned possess the peculiarities of most of the other plants of the steppe, which Nature has so organized, that at the time of their maturity they expand their branches, and easily break off near the roots, so that their seeds are scattered in every direction by the wind. Of a similar organization is the *Cachrys* of this country, which, like the rhubarb branches
into

into a round bush, easily wafted about on the plain; and by its light and spongy seeds, as well as the *Biscutella*, by its feminal wings, and the *Moluccella*, by its expanded calix, present, as it were, pinions, that the seeds may be more easily carried away by the passing gales. In the vicinity of the salt-pits, I observed the beautiful *Salsola lanata*, and *Onosma orientalis*, as well as the slender stems of the *Salicornia Arabica*. The *Lappula* grew here uncommonly beautiful. In verdant hollow places I found the *Papaver rhæas*, which I had not before met with as indigenous in Russia, and the *Bromus squarrosus*, both in considerable numbers.—This neighbourhood also produced many rare insects; and on the barren hills different species of eagles built their nests, which now contained the unfledged eaglets. Near the salt-pits were scattered smooth lime-stones, and small flags, on which appeared rude engravings of Mungolian and Tungusian characters;—with them perhaps a new method of multiplying prayers, or recording the writer's name." Vol. iii. pp. 543 to 546.

The small lakes on the steppe, in the environs of Tshaptshatshi, had at this time a plentiful supply of tolerably sweet and potable water. Even one of the two vallies between the hillocks, which was overgrown with bulrushes and reeds, abounded with good water; but in the other valley, where the rock-salt had crystallized around its edge, the water was of a saline taste.

The place where I had formerly observed this salt on the surface, was now filled up; but we found it by digging in one
of

of the pits, which we discovered in the western part of the valley. All the trenches and pits along the sides of this valley, and adjoining the hills, were probably those made by the Kalmuks when in search of rock-salt, which might readily be obtained in most of them, at a very small depth. In the pit which we cleared, it was evident that the rock-salt did not form a completely horizontal stratum, but had an inflected superficies, and was irregularly waved with grey streaks, apparently originating from a black mire. Immediately above this bed of salt, there was a waved stratum of grey clay, about an arshine thick, and covered with a sandy marl, which forms the whole of the incumbent surface.

Besides the two principal vallies, there are some adjacent cavities, in the form of basons, which appear to have originated from declinations of the earth; and where the sheep of the Kirghis had wintered. Wild tulips, as large as those produced in gardens, flourished on the fertile declivity.

On the most elevated N. W. summits of the hills, I found a soft porous gypsum on the surface, in precipitated layers. The hillocks and rising grounds of Minggan, which can be seen from this place, appear evidently to form a chain of communication between Tshaptshatshi and Arfagar. Towards the N. W. the salt-marshes extend in the same direction.

We found here innumerable swarms of gnats, but as we were encamped on a detached eminence, and as the weather during the night was tempestuous, accompanied with thunder, we were not incommoded by them. On the return of morning, however, we discovered under our beds some unwelcome visitors,

visitors, in the yellow scorpions * of this country, though their sting is not dangerous. The short-headed lizards † were innumerable in the infertile and saline spots. The females, at this time, were all pregnant with eggs; and I remarked that this little animal always had the general colour of its skin similar to that of the soil it inhabited.

In the vegetable kingdom, I observed scarcely any new plants. The *Delphinium atropurpureum*, was now in bloom in the vallies; which plant I likewise noticed near Sarepta, in the declinations of the higher regions. I also found here the *Verbascum Phæniceum*, *Ranunculus lanuginosus*, *Erysimum cheirantoides*, *Astragalus tenuifolius* and *alopecuroides*, *Onosma echiioides*, *Achillea tomentosa*, *Cucubalus glutinosus*, *Centaurea salmantica*, *Arabis hispida*, and *Stipa pennata*. The *Rheum Caspium* grew luxuriantly, and displayed its juicy seed of a blood-red colour. The plants advancing towards bloom were, the *Sium Falcaria*, *Peucedanum anagymnodes*, and *Eryngium planum*, the stalks of which now afforded a very delicious pot-herb; and beside these the *Dodartia Orientalis*, *Artemisia Dracunculus campestris*, and *Piperita*, *Onopordum Acanthium*, *Phlomis tuberosa*, *Statice tatarica* and *trigona*, and the *Lepidium latifolium*. Past the bloom, but still discernible, were the *Cachrys odontalgica*, *Tulipa Gefneri* and *biflora*, *Scorzonera tuberosa*, *Moluccella*, *Biscutella perennis*, *Lepidium perfoliatum* and *ruderales*, and *Tamarix gallica* in small shrubs, with short catkins, which might perhaps denote a particular genus. Besides these, I also remarked, espe-

* PALLAS's Travels, Part iii. page 677.

† *Lacerta helioscopia*. PALLAS's Travels, Part i. Supplement, page 457. n. 11.

cially on saline spots, the *Anabasis*, *Salsola fruticosa*, *lanata*; *Polycnemum oppositifolium* *, *Camphorosma monspeliaca*, *Statice suffruticosa*, *Atriplex Halimus* and *portulacoides*, *Artemisia maritima* and *contra*, *Axyris ceratoides*, and similar plants.

On the 17th, in the evening, I rejoined my escort, which I had left behind at Burlukhuduk. I immediately ordered the horses to be harnessed, to hasten my return during the night, and to meet the expected provisions, of which we begun to feel the want. Towards the dawn we encamped on a wave-like, sandy, and verdant steppe, somewhat farther westward than Soon-khuduk. Here the *Allium Caspium* blossomed in great abundance. After baiting the horses, we pursued our journey through Ordelyk, and met two numerous caravans of Tartar and Armenian merchants, who were travelling to Orenburg; in the afternoon, after passing the parallel ridges of Ordelyk, and the last sandy eminences, we reached the beautiful low country on the banks of the Ashuluk, a lateral canal of the Akhtouba, between Urakmullah, and Ashuluk, two posts of the military cordon. At the latter post, we found springs in two different places. The *Moluccella tuberosa* grew to a very large size, and was in full bloom on the argillaceous sandy height.

About six versts beyond this place, the Ashuluk deviates from its lateral course near the Akhtouba, and flows in a winding channel through a charming verdant and extensive valley, which the retreating heights of the steppe here present to the eye; and this river again falls into the Akhtouba, near the military post of Dolotkhan. In this valley, I found the follow-

* PALLAS's Travels, Part i. Supplement, page 484. n. 96. Plate E. Fig. 2.

ing plants in full bloom, and growing in abundance: the *Carduus nutans*, *Gratiola*, *Arenaria rubra*, *Potentilla bifurca*, and *supina*; while the *Triticum repens* was the most general species of grafs. The Volga commonly inundates a part of this low country every year; but that river remained unusually low at this season; its stream being scarcely two thirds of the height formerly remarked. — The *Tetrao arenaria*, in the Tartar language Bulduruk, flew about here in great numbers.

On the 19th, after we had somewhat recovered from the inconveniencies and hardships we had experienced in our journey over an infertile steppe, and refreshed ourselves with new milk, we left this valley and proceeded to Selitranoi-Gorodok, about twelve versts distant. In our passage we observed several villages of the Kundure Tartars, or Manguttes, who are the only descendants that remain of the ancient horde of the Nagay Tartars. About half way we arrived at an elevation which rose higher towards the Ashuluk, where we saw the ruins of ancient Tartarian buildings. The country has received the name of Kafan, from a large iron saltpetre kettle lying on the bank of the Volga, and which, according to a tradition of the Tartars, has been thrown on shore by a flood. The Manguttes have erected on the top of this eminence, a square brick wall, with high projecting angles. In its vicinity there are many sepulchral mounds, covered with bricks. Over the whole height I observed a very slender non-descript *Astragalus*, in great numbers, and already bearing seed in pods. The low country produces plants which indicate a nitrous soil, such as the fetid *Lepidium ruderales*, *Peganum Harmala*, *Zygophyllum Fabago*, and *Hyoscyamus niger*.

* * *

“ The abandoned faltpetre-work called Selitranoi-Gorodok is situated in the midst of a hilly tract, extending to upwards of ten versts in length : here, along the banks of the Akhtouba, on a place from one to two versts broad, we discovered in every direction heaps of rubbish, traces of buildings, and tombs of brickwork, being the ruins of an extensive city of the Nagays. There had been a small fort erected on a hill, which unquestionably contained the principal and most elegant buildings of the place, and was surrounded by a strong wall ; but at present the fort, which was originally built for the protection of the faltpetre-work, is in a ruinous state, together with its dependent buildings. We particularly remarked the remains of two buildings, the most magnificent of which has lately been cleared of its rubbish, with a view to discover treasures : the other, if we may judge from the existing ruins, appears to have been a dwelling-house with many apartments. The former of these buildings, as is evident from its foundation and sepulchral walls, has been the family mausoleum of a Khan, with a superstructure which probably was a house of prayer.

“ This venerable place, as we were informed, has been plundered of many treasures, and whole coffins covered with silver. The fabric forms an oblong square, in a direction from N. N. E. to S. S. W. about twelve fathoms long, and eight fathoms and a half broad, when measured on its southern point. We could distinctly trace two equal divisions, on the northern side,

fide, beneath which were the sepulchral vaults, as is obvious from the tombs that have fallen in: while the southern division, especially on its portico, has been ornamented with Gothic pilasters, columns, and arches, the fragments of which are still distinguishable. Its foundation walls are nearly two fathoms high, and upwards of two ells thick. In the whole brickwork, which consists of beautiful broad squares, disposed in the most regular manner, there is a degree of taste and elegance of which I have no where seen an instance among the ruins of the Tartars. The outside of the walls is not only embellished in all the interstices between the bricks with glazed earthen ornaments, of a green, yellow, white, and blue colour, in triangular and other figures, but we also observed on the principal front of the building, the remains of Gothic stucco-work, which was decorated with glazed figures, such as artificial flowers, shell-work, nay, whole tablets in the Mosaic style.

“ But the tooth of time, and the depredations of the vulgar, have many years since converted these remarkable vestiges of antiquity into heaps of ruins. Formerly whole cargoes of bricks were carried from these buildings to Astrakhan; though, on account of the excellent cement, the workmen who were employed in demolishing entire walls, were obliged to destroy at least two thirds of the bricks. Tradition relates many extraordinary stories of the coins and precious relics which were formerly dug up and collected here in great quantities, but I doubt whether many of those antique treasures have been rescued from the plundering barbarians, and judiciously consigned to the antiquarian; or whether any of them have been transmitted

transmitted to the Cabinet of Russian Antiquities, which belongs to the Imperial Academy of Sciences."—Vol. iii. pp. 551 and 552.

At a short distance from this place is the military cordon of the Akhtuluk; above which that branch issues from the Akhtouba. After travelling over a second eminence, we reached Selitranoi-Gorodok, where we found only one wretched fisherman's hut, preserved merely to maintain the proprietor's right of possession, who has been entirely ruined by the establishment of a saltpetre work, so that the rusty kettles of this relinquished manufactory lie scattered along the bank of the Akhtouba.

The following is the history of this abandoned saltpetre-work, as I have extracted it from the Chancery Records: In 1715, the Board of Artillery and Fortification granted to Major IWAN MOLOSTOF the privilege of removing his saltpetre-works, from the governments of Kasan and Simbirsk, to the steppe on the banks of the Akhtouba, below Tzaritzin, where a sufficient quantity of nitrous earth had been discovered, between Selitranoi-Gorodok and Krasnoi-Yar. During the succeeding three years, the proprietor was supported with money from the treasury, to the amount of nine thousand eight hundred rubles; in consequence of which grant the manufactory was established, and the saltpetre delivered to the Board of Artillery, till the death of the Major, in 1737. His brother and heir transferred this establishment, for a limited number of years, to Gerasim Glasof, a merchant of Simbirsk; but the latter became
insolvent,

insolvent, and the establishment reverted to the Crown, in 1740. At length a merchant of Astrakhan, Fedor Kobyakof, solicited the Board of Artillery and Fortification to grant him a lease of this manufactory, which he obtained in 1751, under the following conditions, entered into between him and the Chancery of the government of Astrakhan. Fedor Kobyakof engaged to pay the value of the buildings, utensils, and raw materials of this saltpetre-work, as well as of the works at Krasnoi-Yar, on the Sharenoi Bugor, near Astrakhan, and at Uviek, near Saratof; which payment the government allowed him to render in purified nitre. He had permission to boil saltpetre in any number of kettles from three to ten, reckoning two hundred and fifty pood of nitre from each kettle; and to employ the workmen of this manufactory, who were subjects of the Crown, for the term of five years, at his own expence. Government agreed to pay him three rubles and twenty-five kopeeks for each pood of saltpetre; but he was not entitled to export any of that article, without a licence from the Board of Artillery, and without paying the legal duties. Should the production of saltpetre not be sufficiently profitable, in consequence of the diminution of the nitrous soil near the works, he was permitted to transfer the establishment to places more favourable to his interest. He was exempted from all civil imposts, and enjoyed the exclusive right of fishing in the Akhtouba, to the extent of thirty versts above and below the saltpetre-works. For the protection of this manufactory, the Crown furnished him with ten pieces of cannon, and twelve artillerymen, under the command of a corporal. If the works
should

should be interrupted by the inroad of an enemy, or any other unforeseen event, he was to be free from all responsibility. Lastly, Government granted him permission to purchase a village, not containing more than seven hundred inhabitants, one half of which he was empowered to remove thence and employ in his saltpetre-work. A clause, however, was made, that if he were to stop the manufacture for six months, he should be obliged immediately to sell the saltpetre-works, as well as the subjects employed therein, to an individual entitled to possess vassals.

I have not been able accurately to learn how far these conditions were fulfilled. The proprietor of the manufactory never employed above twenty of his own people on the spot, and at the time of his death in 1760, the establishment, which devolved to his eldest son, very soon fell into a state of inactivity. In the year 1765, the Board of Artillery received the last produce of saltpetre from this place, and every possible means were employed to prevent the revival of the manufacture. The retreat of the Kalmuks, and their previous devastations in the saltpetre-works, afforded an additional pretext for relinquishing the business, and the proprietor took that opportunity of estimating the damages at the most exorbitant rate. Indeed, the smallest care has not been taken to provide raw materials, by making artificial beds, and remixing the lixiviated earths, so that the original stock of nitrous matter must necessarily soon be exhausted. The proprietor was more solicitous to derive profit from the fishery; and, from a similar motive, his heir has hitherto contrived to keep possession of this establishment. At present

present his contract, as well as a debt of about twelve thousand rubles, due by him to the late Commercial Bank, are almost forgotten.

If the saltpetre-works were to be re-established in the region of the lower Volga, the following ought to be the previous arrangement: In places where the soil is exhausted of its nitrous particles, saltpetre-beds and drains ought to be made, for which that country is extremely well adapted. These beds should be composed of manure, the entrails of fish, brine obtained by curing them, with an admixture of lime: such a compost would enrich the soil, prepare it for the production of saltpetre, and enable the manufacturer successively to continue the preparation of artificial beds with the lixiviated earth. Many new tracts of soil might be advantageously employed by making walls, banks, and drains, and thus extending the surface; while the efflorescence of nitre, spontaneously formed, might be profitably collected. What is called the Sharenoi Bugor, and the whole soil of the city of Astrakhan, is still richly impregnated with nitre. A great quantity of this salt might also be obtained near the Madzhary, in the vicinity of the river Kuma; a circumstance which shall afterwards be explained. It would farther be necessary, on account of the increasing price of fuel in these countries, to evaporate the first lixivium of nitre in found cisterns or reservoirs; a process to which the intense heat, and long continued drought of this climate, are very favourable. Thus crude saltpetre might be obtained without fuel, and its purification might afterwards be accomplished at much less expence. I am inclined to believe, that the Indians, by a similar process, are enabled to furnish their

their saltpetre to Europeans at so low a price. The experiments I have made on this subject were attended with the best success, and I would advise this mode of saving fuel to be employed throughout all the southern countries of the Russian Empire; as much crude nitre could thus be obtained in summer, which might be purified at leisure in winter. The saltpetre-boilers should make use of troughs that can occasionally be taken to pieces, and thus more readily conveyed from one place to another; such, for instance, as are used to carry lime for building; or similar to those drawn about in Podolia, when people are sent in search of nitrous earth.

On these heaps of rubbish, and lixiviated beds of earth consisting chiefly of sandy marl, the plants were more advanced in growth than in colder situations, and many of them were already past their bloom; while in other parts they had scarcely begun to blossom. The *Secale villosum* and *prostratum* appeared here as if they had been sown. I saw in similar profusion, the *Alyssum calycinum*, *minimum*, and *campestre*, *Lepidium perfoliatum*, *Sinapis rubella*, *Fumaria officinalis*, *Sisymbrium Sophia* and *Læselii*, *Lappula*, *Hyoscyamus niger*, *Ceratocarpus*; but not so numerous the *Androsace maxima*, *Hypecoum pendulum*, *Dodartia*, *Cheiranthus nitrarius* and *salinus*, *Cachrys odontalgica*, some few *Ferulæ*, *Asperugo procumbens*, *Echium rubrum*, *Lithospermum*, *Veronica verna*, *Onosma orientale*, *Trigonella corniculata*, *Medicago sativa*, *Malva vulgaris*, *Onopordum*, *Chamomilla*, *Alhagi*, *Salsola prostrata* and *ericoides*, *Polycnemum vulgare**, several species of wormwood, the *Thlaspi*, and along the shore, the

* PALLAS's Travels, Part i. Supplement, page 583. of the original Plate D. Fig. 2.

Lycium Tataricum, *Rubus cæsius*, *Messerschmidia*, *Xanthium*, *Astragalus contortuplicatus*, wild hemp, and various species of Orach. The *Morus nigra* was at this time in full blossom, but there were few of these trees to be seen. On the northern part of the plain, there is a salt-pool, near which a number of the *Salicornia herbacea* were in bud.

I here dismissed my escort of Kozaks and Tartars, who had accompanied me through the steppe; and on the 20th at noon continued my journey. Above Selitranoi considerable eminences of sand descend towards the Akhtouba, and form what are called the five steep banks, in the Tartar language, Bish-Dshar; and in the Russian, Pat Yary. Between these heights there are beautiful verdant glens, some of which contain salt-pools, where the *Lepidium crassifolium** grew with thick roots, similar to those of horse-radish. We passed hillocks which the Tartars call Shoggasy: one of these is appropriated for their cemetery. On another isolated hillock of a conical form, the Kalmuks who were stationed here at the military posts have erected a singular monument. It is a circular column, raised on the very summit of the hill, and constructed entirely of the skulls and jaw-bones of horses, closely adapted to one another: around it they have made a low wall and fosse, ornamented with the bones of those animals, disposed in regular order. An epidemic which prevailed some years ago, and destroyed a number of horses belonging to the military piquet, as well as to the Kirghis who passed the winter here, afforded the materials for this monument. On its top is placed a

* A dwarfish plant, homogeneous with the *Lepidium latifol.*, with thick coriaceous roots.

horse's head of an extraordinary size, with the nose pointing towards the East, while the other heads are placed with their noses inwards. The Vignette No. 3. gives a distinct representation of this columnar structure.

In this neighbourhood the current of the Akhtouba is increased by the waters of the Glukhoi Afhuluk, which above this place receives the rivulet Khara-uffuk near Ogurma, another branch of the Akhtouba. The Khara-uffuk separates itself from the Akhtouba immediately below Saffikol.

We were overtaken on the abovementioned hillocks by the first thunder-storm of the season, accompanied with a heavy shower of rain. The military post of Gory Karabali is stationed on these heights, from which, in a serene evening, attended with continual flashes of lightning, we arrived at an extensive low country called Karavaily: it was entirely overgrown with the *Holcus odoratus*, and the *Triticum repens*. In this valley were encamped numbers of Auli, or migrating hordes of the Kundure Tartars, among whom was the family of my guide Arflan, one of the most wealthy elders of that nation. I found felt-tents prepared for us here, where we passed the night the more cheerfully, as in the neighbourhood of temporary encampments, surrounded with various herds of cattle, the gnats in a manner disappear; for at this season those insects are innumerable along the Volga, and allow no rest to the traveller, if unprotected by a proper tent.

The Kundure Tartars, whom I formerly found in their peculiar felt-tents, in the form of baskets, which could not be taken to pieces, but were placed on poles supported by two-wheeled carriages, had now begun to dwell in huts similar to those of



the Kirghis. Their former method of constructing tents was likewise common among the Nagays; but the present form has probably been adopted from the Kirghis, who visit these countries every winter; and whose tents, as well as those of the Kalmuks, are made in a more ingenious manner. They consist of several pieces which can be disjoined, and thus form a more capacious and convenient tent. On the sixth plate I have given a representation of both kinds of tents, as they are at present alternately in use among those people; and likewise a view of their manner of travelling and encamping. All that I can add respecting these wandering tribes, is, that each wealthy Tartar family commonly has two tents, one for the reception of their visitors, and the other appropriated to their females. The latter is generally constructed after the ancient method*; besides which, according to the number of the family, they usually have one or more covered two-wheeled chariots for their wives and daughters. These chariots are painted of various colours; and on the fore-part there is commonly placed a chest covered with ornamental tapestry, and containing their best clothes. The inside of these vehicles, which are generally drawn by two oxen, is occupied by the female part of the family during their migrations. Besides these chariots, they have one or more two-wheeled carts, called Araba, which are loaded with their tents, chests, and other heavy articles. The moveables of each family remain together on their journey, and in regular order,

* The Kurdes, who inhabit the heath of Mogan, employ the most simple means in constructing their tents, which might be very convenient for light troops. They place two long bent poles transversely, fasten them at the centre above, and fix their ends in the ground; they then cover them with felt, or mats of sedge.

as represented on the plate. The hut is placed on the axle-tree of the carriage, in which the mistress of the family always precedes the caravan. The flocks and herds are driven by men on horseback, and each species of cattle proceeds in a separate drove. When the tents are pitched in a place selected for an encampment, a variegated coverlet is raised on a long moveable pole, to the windward of the aperture that emits the smoke, in order to promote its ascent from the tent. At a distance from the camp, there is a cemetery on an eminence, as represented on the plate. These sepulchral monuments have square walls of a greater height towards their angles, and are erected only for the wealthy and the priests, while the lower classes of the Tartars are buried beneath small heaps of earth or stones.

The seventh plate represents the *costume* of the women and girls of this nation. Their dress differs in several particulars from that of the other Nagay tribes. The girls wear a sort of red cap, made of the rind of trees, in the form of a bee-hive, and ornamented with pieces of tin. Corals and small pieces of coin are suspended around this head-dress. The gown is made of variegated silk stuff, has long narrow sleeves, and is adorned from the breast to the waist with tassels of tin or silver, buttons, little bells, and rings. They wear a strap or cord over the left shoulder, to which is attached a tin case, containing amulets, and usually a large shell of the genus *Cypræa*. The women are the most inelegant beings imaginable; and, in summer, dress in an upper gown of an uniform colour, a long white cloth on the head, and over it a common fur-cap. In the perforated right nostril they wear a ring, adorned with corals, pearls, or precious stones. This is also considered as an ornament



ornament by the more elegant Tartar ladies of Astrakhan.— In the back-ground of the plate, are also represented the tombs of these Tartars.

According to the latest calculation, the number of this people, in the whole district of Krasnoi Yar, amounts to one thousand six hundred and thirty males. They lead a wandering life along the banks of the Akhtouba, from Krasnoi Yar to the vicinity of Saffikol; and are rich in flocks of sheep, but more particularly in black cattle, which they employ chiefly for drawing their chariots and baggage-carts; because they are not yet provided with camels. Their horses are numerous, but not of the best breed.

On the 21st, in the morning, we left the pleasant vallies, and travelled over a high sandy ridge, which, as well as the former, is called Karavaily, where the upper military post of Karabalinskoi is stationed, nearly opposite Yenataevka. On this ridge, and another greater height beyond it, I found the *Astragalus alopecuroides* as regular as if sown, and in greater abundance than I had before observed. These heights are succeeded by a rising plain, extending along the Akhtouba to a low country, which is interspersed with saline tracts. We arrived near the advanced post of Skvortzov Yar, or the bank of the starlings, where the Ashuluk receives the Khara-ussuk. Here the marine acid and pulverulent soil every where produce long, but inferior grasses and plants, such as the *Bromus giganteus*, the coarse species of sedge, sorrel, wolf's-milk, and the *Tragopogon pratense*. Innumerable swarms of midges infest this region. The valley continues as far as the sand-hills of Saffikol, or Salskol, which extend along the banks of a branch
of

of water, called by the same name, as far as the source of the Khara-ussuk and the Akhtouba.

Saffikol is a false branch of the Akhtouba, and runs to the South and South East, in a serpentine direction, into the steppe. This branch of water consists of connected pools and bays, covered with rushes, and by which the Akhtouba inundates the country, though only at high water. It is bordered on both sides by sand-hills, which are said to be connected with the tract of sand called Burlu, that joins the sand-hills of Soon. In the month of June, when the lowest vallies are divested of their grass, and overflowed by the Volga, the Kundure Tartars retire hither; regarding this country as the upper boundary of their pasturage. The *Pallassia* grows on these hills of drift-sand in the greatest abundance and beauty, because it is never eaten by cattle. At this season it was in full bloom, as well as the other plants that usually flourish on loose land.

We left our horses to graze on the borders of this valley; and after having passed the first series of sand-hills, we proceeded to the ditch of water which disappears farther southward. It is pretty broad in different places, abounds with fish, and is skirted by a pleasant low country, covered with sedge, tamarisks, and willows. We went along its western verge almost to its issue from the Akhtouba, about five versts below the post of the military cordon Mankhalinskoi; we then crossed it and ascended the opposite sandy eminences, which terminate in an elevated plain. In the evening, after travelling a short distance, we arrived at Mankhalinskoi, or, as the Tartars call it, Kuyutkhu, where we reposed during the night.

On

On the 22d, early in the morning, we pursued our journey over a beautiful champaign, which the Tartars call Alabas, where another false arm, called the little Saffikol, extends three versts into the steppe, and is accompanied by sand-hills. Near this open country the military cordon Akhtoubinskoi is stationed; and on a height, near its upper extremity, is the post Solotukhino; in the vicinity of which the Governor of Astrakhan has established a farm for rearing cattle. From this neighbourhood, towards the source of the Akhtouba, the country is low and rich in wood, which has been spared by the hordes of Kalmuks, and thence called Setterta-Modun, or the sacred wood, corrupted by the Kozaks into Sikkerta. Farther up the Akhtouba there is a still more beautiful sacred forest, and another below Saffikol; but these, also, destructive self-interest will soon extirpate. The sand-hills, which bound this low country upwards from Solotukhino, are called the great and small Buruni, and are distinctly seen from Tchernoiyarsk; while the sandy isles of the Volga, which likewise produce the bushy *Pallassia*, appear to form a successive series with these hills.

I sent my baggage directly to Volodimerovka, the great Slobode opposite Tchernoiyarsk, with directions to prepare for my passage over the river near that place. Meanwhile I wished to revisit the mountain of *Bogdo*, situated in the interior of the steppe, and which is distinctly perceptible from Solotukhino, at the distance of thirty-five versts. On my way thither I passed over a sandy tract, interspersed with dells, called Ishküll, or Ishkilly, where a solitary spring, overshadowed with the white small-leaved willow, was particularly remarkable. Beyond this

tract of sand, as far as the mountain of Bogdo, and the saline lake at its foot, known in the ancient Russian hydrography by the name of Utonshak, the soil throughout was an argillaceous, saline steppe, where I found the *Crambe Tataria** thinly scattered and in blossom. Where the steppe insensibly rises near the sloping side of the mountain, I saw the Caspian rhubarb growing in abundance, though the plants were of a sickly appearance, occasioned by the frequent digging for their roots.

* * *

“ *Bogdo-Oola*†, in the language of the Kalmuks, when viewed at a distance, in the direction from East to West, presents a single, oblong, mountainous ridge, which has a projecting knoll on its northern extremity, and terminates much lower, though precipitately, towards the South. This mountain is situated on a steppe entirely level; and on account of its resemblance to a lion couchant, on the steep eastern side, the Kalmuks call it the *Arflan-Ulá*, or the lion’s mountain. The ridge or back of this hill, however, does not run in a straight line, but gradually declines from the oblong higher summit, in a direction from N. W. to S. E., terminating towards the the West, and forms, by its gently sloping side, a kind of shallow, empty pit, from which the rain-water retreats by a

* This plant may with more propriety be called Tattran, or Katran, a name given to it by the Russians and Tartars. M. DE JACQUIN has described it under the name of *Tataria*.

† *Bogdo* signifies, in the Mongole and Kalmuk tongue, something lofty, sublime, or monarchical; in this sense, the sovereign of China is by these people called *Bogdo-Khan*, or the most sublime ruler; sometimes also, Ammongolong-Khan, or the happy monarch.

glen. The eastern and southern fronts of this ridge, if measured by its curvature, may be seven or eight versts in length: it is in some places abruptly broken and rugged, while its horizontal strata, intersected towards the West, may be distinctly traced. The highest cap or knoll is abruptly fractured on its eastern side: between this precipice, and a steep mass of rocks which lie parallel to the former, there is a wide cleft or chasm, partly filled up, in which we observed another parallel mass, though not of equal length, consisting of marly layers.

“ I shall describe the horizontal strata of this remarkable mountain, proceeding regularly from the summit to its base. The proper top of the hill, and a lower ridge of it, extending nearly in a straight line to the West, without following the incurvations around its circumference, consist of a coarse, calcareous schistus which rises on its highest part to about fifty or fifty-five fathoms in a perpendicular direction above the surface of the steppe. The lime-stone is solid, and of a lightish grey colour; it breaks in tolerably large thick flags, which contain many protuberances and cavities, being very ancient and obscure traces of petrified testaceous animals. Few of those petrifications are sufficiently distinct, and I have scarcely met with one complete specimen, excepting, however, a *cornu ammonis* in a good state of preservation.

“ Beneath this calcareous stratum, there is a considerable argillaceous bed intermixed with marl or sand, which forms the greatest part of the mountain, and is apparently upwards of twenty-two fathoms thick. It is chiefly of a red colour, and alternately consists of white and grey strata, which are often sandy below, but of a calcareous nature in the upper parts, and

much impregnated with common salt. Hence the marl collected in a small ditch, and particularly that in channels formed by the rain on the eastern side of the hill, as well as on the edges of the white strata, crystallizes in regular, small, saline cubes. The greater part of the steep side of the mountain, as well as the bulky middle stratum, and the large cleft above-mentioned, are composed of such marl. The rain-water has in many places washed away this argillaceous soil, and formed deep cavities, so that when the crust gave way, we frequently fell into them as deep as our loins; nay, it is reported, that in the middle stratum, where we still observed several deep cavities and pits, there was a prodigious and almost bottomless abyss, into which the Kalmuks, from a religious zeal, formerly threw various oblations, such as gold, coats of mail, and articles of dress, so that they could hear them drop into the water. But this cleft, which in their language was called Bogdoin-Kunda, was filled up previous to the retreat of their last horde, governed by a Khan, and cannot now be discovered. — In the argillaceous strata we occasionally observed selenites, and the present Kalmuks assured us, that here, as well as in the western sandy part of the mountain, there have sometimes been found large and pure crystals of common salt of a very hard consistence, from three to four inches in diameter: these crystals were held in great estimation among that people, on account of the sacred nature of the place, and were denominated Morel Dabassun; but since the departure of the horde called Torgotes, no rock-salt of that magnitude has been discovered.

“ Below the horizontal stratum of marl now described, there is a grey, coarse sand-stone, frequently intermingled with gravel
and

and small pebbles, principally lying in prodigious flat rocky masses, but partly also in the form of a coarse schistus. This horizontal bed of sand-stone presents only an angle, at its eastern point, which chiefly constitutes the external large dorset beforementioned, in a parallel situation to its parent mountain; after which it runs into a precipice, in an angle of from thirty-five to forty-five degrees, under the western part of the hill; so that this stratified mass of the large cleft which lies open between the dorset and the mountain, produces, at the side of the former, a rocky and obliquely precipitated foil. Along the large dorset, the sand-stone here and there presents remarkable clefts and crevices, among which one in particular attracted my attention; it was decorated with shrubs of the buckthorn, and afforded a view highly picturesque.

“The eastern declivity of this rocky dorset has a very singular appearance. As the sand-stone has probably in several places been soft, it is apparently corroded with various small globular cavities resembling grotto-work. It is obvious that this uncommon formation of sand-stone could be produced by no other cause than the power of the dashing waves, at a time when the whole steppe formed part of the Caspian Sea*; for these excavations cannot be discovered on the higher parts of the sand-bank. — On the plain extending towards the saline lake, there are scattered several fragments of cliffs which appear to have been entirely covered by water. Among these we met with globular pieces of various sizes, which, on breaking

* Vide the interesting treatise on the separation of the Caspian and Black Seas, page 78. and following of this volume, as extracted from the author's former Travels.

them,

them, were partly hollow, and contained sand not unlike regular geodites. — During the prevalence of easterly winds that blow with violence against this grotto-work, the highest part of which is towards the South, it appears to a person standing on its summit, as if he heard the distant murmuring of many hundred voices joined in prayer. The phenomenon was particularly striking on the day when I visited this region, during a violent storm from the North-East. The credulous Kalmuks are told by their priests, that the tutelary spirit of the mountain, or the white old man, whom they call *Tzaghan Ebughen*, resides in a large cavern beneath this mountain; and that this is the chosen abode of saints, who are engaged in continual devotion, and spiritual songs.

“ On the lower ridge of the mountain, situate towards the southern steppe, the sand-stone forms the whole body of this lofty acclivity, on which the *Pallassia* grows in abundance: there is, however, a small projecting part of the mountain, opposite to the southern angle of the highest peak, the uppermost part of which consists of lime-stone. But the horizontal bed of sand declines considerably in a western direction, deviating also towards the North, so that the strata of this mountain throughout appear to have sunk together, and formed the flat basin before described.

“ Below the sand-stone, towards the South of the steppe, there is a very fine schistus of sand, combined with marl richly impregnated with a bright red colour; which the superstitious Kalmuks formerly used for painting their tent-posts and other wooden utensils. They held this marl in high estimation, considering

considering as sacred the excellent colour it produced, which they distinguished by the name of *Soffun*.

“ On the highest part of the mountain, and on the most elevated spot of the rocky and sandy desert already described, the Kalmuks have erected a monument of flags filled up to the height of several fathoms, so as to form square columns, which may be seen at a great distance. Although I have repeatedly surveyed the whole circumference of this mountain on foot, I could discover but few traces of their superstitious customs. At a distance of six versts, however, from this remarkable assemblage of hills, towards the Volga, I observed an ancient altar of the Kalmuks erected of alternate layers of sedge and reeds, called *Dændær*, which is the only vestige of a festival formerly celebrated in this place. On the same side, at the distance of a verst from the mountain, in a level country, there is a small lake of sweet water, on the shore of which the Kalmuks usually encamped.”—Vol. iii. pp. 667—672.*

After a brisk ride we reached the mountain of Bogdo towards night, during a dreadful thunder storm, accompanied with a little rain, which was however but a short interruption of the fine weather, so that I was enabled to employ the following day with advantage. I found the same plants that had formerly been the object of my researches in this country. On

* The author has been so prolix in the description of this mountain, that several passages, in which he gives too minute and circumstantial accounts of the particular spots, being of no interest to the reader, have been here purposely omitted.—*Transl.*

the calcareous and rocky back of the mountain, I now saw the *Lichen esculentus* in uncommon abundance, which I formerly had not remarked in this place. The thorny *Hedysarum*, mentioned in my former Travels, I found on the projecting side of the mountain, which consists of a calcareous marl, where this indigenous plant is peculiar to the spot. Its far-spreading root is almost as sweet as that of liquorice. As the level ridge of the mountain, when I revisited it in July, had been scorched in consequence of a recent fire on the steppe, the very numerous and venomous tarantulas, *Phalangium araneodes*, appeared to have retreated to the highest barren and rocky summit. Here I found them of different sizes, under almost every flat stone; an assemblage of these insects I had never before observed, as they usually live in a solitary state.

On the same day, the 23d, after having made a botanical excursion, from three o'clock in the morning till the afternoon, and given sufficient employment to my designer, I set out on my return to the Volga, and travelled, without resting till night, sixty versts to Volodimerovka. On the road I met a Kozak who, together with agreeable letters, and much wished-for refreshments from Tshernoïyarsk, brought me intelligence that my affectionate travelling companions waited for me there. During the succeeding night, we made the necessary preparations for crossing the river, and notwithstanding a strong wind which sprung up from the S. E., we set out before the dawn, in two barges, from Volodimerovka. This small place has at present a population of three hundred and ninety-eight males of Little-Russia, together with other inhabitants. I have already mentioned that the Volga is of an extraordinary breadth

near Tshernoïyarsk. It also forms here two branches, which are divided by sandy isles. We embarked when the river was not agitated by the usual gales from the S. E. and N. W., which in this place are often fatal to passengers. But scarcely had we reached the middle of the very extensive current of Volodimerovka Voloshka, when the wind became so impetuous, that our ten-oared shallop was every moment in the most imminent danger, by the waves breaking over us in torrents. We felt still greater apprehensions for the safety of the barge which contained our carriages and baggage, till we saw it lie to, on the farther side of the collateral branch, near an island, and afterwards proceed under its protection, at a considerable distance behind us. We continued our course on the open river, not without danger, and soon lost sight of the barge. At length, after the greatest peril, and not till our rowers were completely fatigued, we reached the opposite bank of the greater Volga; but we were not able to pass the point of land which forms the bank of the river immediately above the fortrefs of Tshernoïyarsk, where the breakers were at this time too dangerous. We therefore landed above that point, and proceeded on foot to the fortrefs. The continuance of the tempest through the whole day, and the following night, excited our anxiety for the safety of the other boat; till at length we had the satisfaction to see it arrive on the subsequent morning.

On the 25th we joyfully set out for Sarepta, where we arrived at the dawn of the following day.

The country of Sarepta, so advantageously situated for increasing the knowledge of plants and insects, engaged my attention so much in the month of June, that I did not think

of my future journey. I was, however, much against my inclination, obliged to continue here part of the month of July, on account of the insupportable heat occasioned by the steppe, which was on fire to a great extent, on both sides of the Volga; and likewise from the circumstance that my daughter caught the small-pox, doubtless the second time, at Sarepta, when this epidemic had begun to diminish, after having raged with violence since the beginning of winter.

Wishing, however, to undertake a journey during the fine weather, and to visit the steppe beyond the Volga, I travelled on the 5th of July to Tzaritzin, in order to be ferried over the river. I found this city almost entirely consumed by a fire, which broke out two days before my arrival. On the 6th I crossed the Volga, and continued my journey between that river and the Akhtouba, over a low country intersected with small branches of water called Yeriki, as far as Besrodnaya Sloboda, or Verkhnei Akhtoubinskoi Gorodok, eighteen versts distant. The sandy and marly soil of this low country produces most excellent crops of hay. The beautiful oak trees here, as well as everywhere along the Volga, are intermixed with the *Ulmus campestris* and dwarf elms, Tartar plane-trees, poplars, willows, aquatic elder-trees, and other shrubs. Beyond Barskoi Yerik, but particularly around Olovatoi Yerik are found, besides those already mentioned, a number of large mulberry-trees bearing fruit of a white, black, and pale violet colour. If these trees had, as is generally supposed, been brought hither and planted by the Tartars, and were not really indigenous, they would not be found growing in an uneven soil, which is frequently inundated, and where they grow widely

widely scattered among other kinds of wood, instead of being planted in regular order. Nevertheless it appears to me very doubtful, whether these mulberry-trees, the representation of which is given in the second part of Plate I. of the *Flora Rossica*, ought to be exhibited as a separate genus, or whether the *Morus tatarica*, be only a variety of *Morus alba*, to which perhaps the *Morus indica* also belongs.

Befrodnaya Sloboda has lately been adorned with a new church, which was attended with great expence to the village, and proves its increasing wealth. On the contrary, the house of M. Rytshkof, the ex-director of the culture of silk, which has been dearly enough paid for by the Crown, has, in consequence of being ill-built, become a ruin in less than fifteen years. A similar fate threatens the house built by him for the rearing of silk-worms, below the village, at the edge of the high steppe.

This village was established and appropriated to the manufacture of silk during the reign of the Empress ELIZABETH. The wild mulberry-tree, which grows in the adjacent low country, induced the government to invite hither Armenians, and other foreigners skilled in the culture of the silk-worm. But this invitation was not accepted by a single individual, as the banks of the Terek afforded a better prospect of success. For the same purpose, about two hundred and fifty straggling peasants were settled here in a new village, and exempted from all taxes, on condition that they would employ themselves in this valuable branch of domestic economy. The direction of this establishment was intrusted to the Hungarian Major Parobitsch, who likewise had the superintendence of the vineyards

planted by him at Astrakhan. But on account of his other pursuits, the establishment was much neglected.

During the reign of Her Imperial Majesty CATHERINE THE SECOND, the Aulic Counsellor Nebolsin, of Astrakhan, was sent to Akhtoubinskoi Gorodok, to give more activity to the cultivation of the silk-worm, and his exertions proved successful. The peasants, however, were little inclined to pursue this branch of industry; because they could at all seasons derive greater advantage from fishing. They incessantly supplicated the Court to employ them in military service as Kozaks. — However, in 1772, my travelling-companion, then Assessor, and now Counsellor of the College, Nikolai Rytshkof, was re-appointed Director of this establishment; and her Imperial Majesty condescended to give instructions, in her own hand-writing, for the management of this profitable business. The new Director found means to deliver to the Court in the same year six pood of silk; a larger quantity in the following year; and by these and other personal means which he employed, he succeeded so far as to induce the Court to enlarge the institution. In 1779, the Court issued an order, that the Imperial College of Economy should furnish to the Director one thousand three hundred families, of voluntary peasants, from the aforementioned Imperial Dominions. These families were transplanted within two years, and settled along the banks of the Akhtouba in six villages. The immunities granted to their predecessors were to be continued to them, as long as they should employ themselves in the culture of silk, not for the benefit of the Crown, but their own emolument, and pay their rents or taxes in silk, at the low price of one hundred and twenty rubles a pood.

The

The same difficulty, however, was experienced with these as with the other cultivators of silk: they had an invincible and rooted dislike to the employment, and consequently were not anxious for its increase. The continual impediments that arose, and their own obstinacy, prevented them from enjoying the advantages they would have acquired, by directing their attention to this business, without relinquishing the fisheries. These they might likewise have carried on, by occasionally employing their wives and children in the establishment. Although cogent measures were resorted to, the culture of silk yearly decreased; nay, the malignity of the peasants rose to such a degree, that, to destroy the silk-worms, they sprinkled them with salt-water. The perpetrators of this atrocity were indeed discovered, and punished by the Government of Saratof; but as the peasants also endeavoured to extirpate the mulberry-trees of the valley, by setting fire to the grass, the silk manufactory was stopped by an order of the Court; and it was left to the option of the peasants, whether they would continue the culture of silk-worms for their own advantage, while, in respect to rents and taxes, they would be put on the same footing with other subjects. From this period, 1714, none of them have evinced the least inclination to cultivate this branch of trade, and they even endeavour gradually to destroy all the mulberry-trees.

It is remarkable, that the repugnance of the Russian peasants to the cultivation of silk-worms should have been hitherto so invincible; for their malignity has also been evinced in the silk manufactory established at Staroi-Krym. This species of obstinacy has proved a great impediment to the prosperity of Southern Russia, where the mulberry-tree is abundant and flourishing.

flourishing. It is quite otherwise with the Armenians and Grufines, or emigrants from Georgia, as well as with the Tartars and Greeks in the Crimea, who voluntarily carry on this branch of commerce. The most certain means of introducing this source of national wealth, and of saving the Empire upwards of a million of rubles, which are annually paid to the Turks, the Persians, and the Italians, for their silks, would be to establish colonies of the Asiatic nations, particularly in the peninsula of the Crimea, where the mulberry-tree grows uncommonly fast, even in a dry soil, when properly watered.

On the whole, the Asiatic method is far preferable to that formerly practised on the Akhtouba, where much time and expence was wasted in feeding the silk-worms with gathered leaves, which soon decayed, and rendered the frequent shifting of their beds necessary. The Persian or Boukharian rears his mulberry-trees to about six feet high, which they attain in four or five years. He then begins to lop their tops and branches, which are given to the insects, as soon as they have sufficient strength, by placing them gently on their beds. By this means the shoots remain fresh and succulent, and the worms devour them even to the woody fibres, so that no part of the nutritive foliage is wasted. As these insects are every day supplied with food, the leafless branches gradually form a kind of wicker-work, through which the impurities pass, so that the cheerful worms preserve the requisite cleanliness without trouble to the cultivator, and speedily attain a vigorous state. In this manner they are continually supplied with leaves, till they prepare to spin, when small dry brushwood is placed in all directions over the leafless branches, and on this the worms spin their

their filk. Two persons, an adult who lops the branches, and a child who collects them, are thus enabled quickly to procure food for a great number of filk-worms. The mulberry-tree in our climate produces new shoots twice every summer. These shoots acquire in the same year the firm consistence of wood, and in the subsequent spring afford an abundant crop of foliage. In Persia and Boukharia, where the summer is longer and vegetation more vigorous, the shoots may even be cut twice a-year. The tree, by this method of cutting, remains always low, and produces a greater number of young shoots from its trunk, as well as from its branches, every subsequent year. By stripping them of their leaves, however, many branches wither, and not only the buds are lost, and much foliage wasted, but the worms receive less nourishment, as the leaves sooner decay. It has been remarked in the filk establishment near the Akhtouba, that the worm, when compelled by necessity, eats the leaves of the *Acer tataricum*, which resemble those of the mulberry-tree.

On the 7th, in the morning, I advanced as far as Sredney Akhtoubinskoi-Gorodok, distant thirteen versts, and the most wretchedly built village on the banks of the Akhtouba. Its inhabitants are so extremely poor, that they are obliged to cultivate the glens of the steppe, insomuch that some of them carry on agriculture from fifty to sixty versts from this river. The whole steppe is dry, greyish, and saline, some small declinations excepted, which still produced several verdant plants, particularly a great abundance of the liquorice shrub. Small, and, as it appears, ordinary sepulchral hills are scattered over this steppe.

When

When I formerly travelled in this country, there was not a village to be seen near the Akhtouba, below Nishnè Akhtoubinskoi-Gorodok. Since that period, however, two considerable villages have been built below Befrodnaya, and one above it, which is called the great village Progrominskaya, and has been colonized by boors from the Imperial domains. Sredney Gorodok, at that time, likewise received an additional number of inhabitants.

The first of the lower and newly-built villages is Saplavna, situated at the distance of thirteen versts. The border of the high country is covered on this side with small sepulchral hills, and a few others are discoverable in different parts of the steppe. I generally observed on each of these, a shallow excavation from which the soil of the hillocks appears to have been removed, and sometimes, with this view, cavities have been dug around the hillocks.

In a direct line over the steppe, towards Saplavna, where the fields of this village lie, twenty-five versts from the Akhtouba, I was informed that there is a large heap of bricks, called by the Russians, Metshetnoi Bugor, or the hill of the House of Prayer, and by the Kalmuks, Temahne Balgasum, or the camel's tower. The Kalmuks give the following account of this place: Dshhanibek-Khan kept here a number of mares, whose milk was conveyed by tubes, from this tower to his residence. — But the numerous sepulchral hillocks scattered over the steppe, sufficiently indicate the purpose to which this building was formerly consecrated.

Saplavinskoi, situated on the verge of the eminence, is divided into two parts, one of which borders on the high country,

country, where the Podstepnoi Yerik issues from the Saplav-naya; the other part lies somewhat lower, and is completely inundated at high water. It contains upwards of one hundred and fifty houses.

From Saplavinskoi to Prishibinskoi, the road runs partly through vallies covered with sedge, and extending along the Podstepnaya. Seven versts from these villages, and near a marshy soil overgrown with reeds, I remarked the traces of a square building, which formed a regular square, each side measuring about eleven fathoms, and fronting a principal point of the compass. The walls of this building were demolished to their foundation; and in some parts to an ell below the surface of the ground. From the flat-formed square bricks of this building, it is manifest that it was erected by the Tartars.

Prishibinskoi is a considerable village, consisting of one hundred and seventy farm-houses, pleasantly situated on the edge of the Podstepnoi Yerik, which immediately beyond it falls into the Priship: here is a principal post of the military cordon, which, passing the saline lake Elton, is continued in a chain to the fortrefs of Usen. There is also a road from lake Elton, extending over the high steppe, and passing near the source of the rivulet Tzarevka; the distance to this lake is computed at one hundred and eighty versts.

A few hundred fathoms from Prishibinskoi, we saw a steep hillock of brick-rubbish, which doubtless was the ruins of an ancient building. On the S.E. plain there is a small lake, which, according to the traditions of the Tartars and Kalmuks, is the Shikerly, or sugar-lake; but, according to others, that lake is farther down in the adjacent valley.

From Prishibinskoi is distinctly seen the beautiful valley of Tzarevy Pody, or the Royal residence. It lies at an angle of the Akhtouba, and an irregular protuberance of the high steppe; it is upwards of fifteen versts long and seven broad. On account of an inundation of the lower ground, we proceeded along the edge of the high steppe, environed by a still higher ground, on which are several respectable monuments of the Tartars. The fetid and muddy rivulet Kulguta, or Kugultu, partly intersects this high country, between which and the brook Tzarevka flowing from the steppe, at the distance of ten versts from the Priship, I pitched my tent for the night, near a farm-yard called Gushkova-Khuter, in order to investigate several Tartar antiquities in this neighbourhood.

About a verst hence, in the vicinity of another farm called Davidkof-Khuter, and near a ditch* of water, there are some curious remains of Tartarian antiquity. I remarked here several other traces of houses and sepulchral hills, similar to those which I had before observed above the rivulet Kugultu on the higher steppe. Among these are three ruins, enclosed by a square bank of rubbish, without a ditch, and with an outlet towards the South.

The monument near the Podpalatnoi-Yerik is a sepulchral mound of a flat form, raised on a square eminence, and consisting of six contiguous and very low arches covered with earth: its base is about one hundred and fifty paces in circumference, and not above a fathom high; but, together with the square on which the vaults are erected, it is three

* This ditch is called Podpalatnoi Yerik, and empties itself by one branch into the Tzarevka, and by another into the Akhtouba.

fathoms of a perpendicular height. This square monument is enclosed by the foundation of a thick wall, which consists of an imperfect sand-stone, quarried on the opposite bank of the Volga. There appears to have been an entrance in the northern side of this wall, which forms an oblong square of twenty-nine fathoms long, and twenty-seven fathoms broad. Its base, measured from North to South, is forty-seven fathoms in extent, and fifty-six from East to West. The space around the vaulted hillocks is considerably excavated within this enclosure; and the vaults of the monument, which probably have long since been plundered of a considerable booty, deserve a more accurate description, on account of the solidity of their construction. The walls that support them are formed of pieces of rough, unhewn sand-stone, about an ell high: the vaults themselves are almost flat, and consist of about six layers of square, oblong bricks, placed alternately, so that one by its breadth supports and covers two others. The spaces between them are nearly an inch broad, and filled up with a cement which in some places appears to have been poured in while in a liquid state. It has, however, acquired such a solid consistence, that it is easier to break the well-burnt bricks, than to separate the mortar. This grey cement appears to be a mixture of unslacked lime, pulverized charcoal, and pounded sand-stone, instead of the sand used for building. In that mass I observed many particles of lime, as white as snow, which readily crumbled into dust, as well as large and small particles of charcoal: this substance being reduced to a fine powder, has probably imparted the grey colour to the cement. Perhaps the admixture of charcoal dust may produce an effect

similar

similar to the earth of Pozzola ; which, however, must be decided by experiment. The durability of this cement may also be ascribed to a mixture of four milk, which, we may suppose, must have been in great abundance among a wealthy pastoral people. In short, the mortar of these vaults is, notwithstanding the constant moisture from above, and the saline nature of the surrounding soil, the best, hardest, and driest I have ever seen ; and the ruins of the flat vaults almost resist the force of the pick-axe, inasmuch that they can only be reduced by small fragments.

On the western side of this mausoleum, distant about forty-two fathoms, there is a round heap of rubbish, apparently the ruins of a brick tower, from which a wall of an ell thick extends five fathoms to the E. S. E., and thirty-one fathoms to the S. S. E., forming an obtuse angle at a circular pit, where it terminates. The bricks and shards scattered here, probably belonged to an ancient aqueduct. I shall not attempt to decide, whether this has been an apparatus for raising water, but so much is certain, that the circumjacent soil, having been made perfectly level, indicates a former state of agriculture. Besides, it is manifest, that at the lowest side of the parapet there has been a mound or bank, formed in regular angles, from eight to ten paces broad, and upwards of a thousand paces long. The earth for this bank has been taken from pits discoverable in several places ; and this enclosure could have served no other purpose, than that of a reservoir of water for gardens. An excellent plantation of mulberry-trees might be established here, especially as the high water of the Volga could be easily conducted through a narrow swampy ditch into the enclosed space, which might serve as a reservoir to communicate a due

degree of moisture to the soil. — Innumerable marshes, along the Volga and Akhtouba, might also be occupied in a manner similar to that practised by the Tartars, in the environs of Astrakhan. They inclose the marshes by slight banks, and cultivate them for the production of rice, cotton, *Sesamum*, tobacco, saffron, millet, *Holcus*, maize, strawberries, madder, and even mulberry-trees, for the subsistence of silk-worms. But instead of these valuable productions, the beforementioned marshes are so much neglected, that they scarcely produce any hay. This country along the Akhtouba is the more deserving of cultivation, as it enjoys an extraordinary degree of solar heat, by its declivity towards the West, and is sheltered on the northern side. There is no doubt that very favourable situations might be chosen here for the cultivation of the vine.

The popular tradition relative to the monument near the Podpalatnoi Yerik is, that the palace of the Khan formerly stood there. I imagine however that this ruin, as well as the numerous vaulted piles of brickwork, are the ancient sepulchres of the Mongole Tartar Princes, and other persons of distinction. The leaden tubes, which are said to have been found near these vaults, have probably been used instead of the spiracles usually made in the Mahometan tombs. — It is certain, that in the sepulchres of this country immense riches have formerly been discovered, consisting of jewels, vases, and ornamental horse-furniture of massy gold and silver. The major part of this treasure has been secretly disposed of to the goldsmiths and merchants; while the remainder is still preserved
in

in the cabinet of curiosities belonging to the Imperial Academy of Sciences at St. Petersburg.

About one hundred fathoms N.W. from the great mausoleum, there is a large heap of rubbish, or ruins, thrown together, and nearly one hundred fathoms in circumference: it appears to have been part of the materials of a building. About sixteen fathoms farther towards the W.S.W. is another square mass of ruins of a moderate size. One hundred fathoms N.W. from the latter, and above two hundred from the large monument, a third oblong and very considerable pile appears, which is probably the ruins of a building: and two hundred fathoms westward, there is a circular sepulchral hill, simply vaulted with bricks. This hill is opposite to, and about one hundred fathoms distant from a lake, which is a verst long, and surrounded with dwarf willows: the lake contains a sweetish water, and is much frequented by a variety of the feathered tribe. According to tradition, it is asserted to be the true sugar-lake of KHARA-SHISHI, the divorced consort of the KHAN DSHENOVAK, who is so often the subject of conversation among the Kalmuks. This lady, it is reported, had fixed her habitation near the above lake, and ordered a large quantity of sugar to be thrown into it, to decoy aquatic birds from the circumjacent parts. By this stratagem the Khan, her husband, who was a great lover of hawking, was induced to resort to the vicinity of her residence, and thus she eventually effected a reconciliation. All the heaps of ruins in the valley are distinctly visible from this lake; and there is also a distant prospect of the pile situated on the high steppe beyond the Tzaritza, which I have already mentioned

mentioned in my former Travels, and the large sepulchral hillocks beyond the Kugultu.

In some parts of this low country there is said to be a regular road paved with bricks, leading over a swampy ditch ; and in other places small regular arches of brick-work are discoverable, which probably have served as a ground-work for the felt tents of the chiefs in a country so rich in pasturage. In my opinion, the ruins are not the remains of dwelling-houses, but partly of mosques, and partly of vaulted chapels, which had been enclosed by walls like the modern cemeteries of the Nagays. A wandering nation, such as were called the golden horde of these countries, could no more be induced to reside in houses, than the Khans and Princes of the Kalmuks along the banks of the Volga ; though the fortrefs of Yenatævka had been purposely established, and dwelling-houses built for their accommodation.

The whole border of the high steppe, above the valley of Tzarevy Pody, is covered with innumerable sepulchral hills, and those called Kurgane, which are scattered down along the banks of the Akhtouba, as far as the Solanka, and upwards beyond Saplavnaya. Some of these hills are very large, and may be seen at a great distance ; but nearly the whole of their vaults have been opened. The largest sepulchral monuments are erected on the most prominent parts of the high country, as in Siberia.

This valley, and the country called Mant-tokhai, situated between the Akhtouba and the Volga, and extending from Tzaritzin to Tchernoiyarsk, have for some years past uniformly been the autumnal head-quarters of the Kalmuk Khans, on
account

account of their excellent pasturage. It likewise appears, that this low country was chosen, in the time of the golden horde, by their princes and chiefs, as a summer residence; while, on the contrary, their head-quarters during winter were farther southward, in the environs of Selitranoi Gorodok or Dzhigit.

In order to make physical and geographical observations on the desert steppe, I proposed to travel from Tzarevy-Pody to that part of Rynpeski *, opposite the mountain of Bogdo; and afterwards to visit the salt-marshes of Khaaki, between the Moo-Bogdo and the sandy desert. These marshes are inundated when the saline rivulet Tzurkhuli Gashoon flows into them on the northern side, and torrents of rain from Moo-Bogdo increase the waters, which appear like a sea. I proposed to cross the lastmentioned rivulet, and advance to lake Elton, distant about sixty versts. My intentions, however, were frustrated; as the general conflagration of the steppe had devastated its surface, and rendered it impossible for us to procure food for our horses in that inhospitable region.

Notwithstanding this unpromising prospect, I persisted in my plan, and actually set out on the 8th of July from the rivulet of Tzarevka, down the Volga. After travelling thirty-six versts over the high, uniform, and dry steppe, I arrived at the rivulet Solanka. Six versts farther, we crossed what is called the Kurkina Balka, or Dzhilga, and continued our journey towards the low country of the Volga, till we arrived at a

* Vide my former Travels, Part iii. Page 532.

farm-house where we passed the night, and from which we saw the large Slobode, or village of Volodimerovka, distant about ten versts.

On the 9th, we proceeded to the S. E., first over rising, and then declining plains, towards the road leading from Dshilga to the salt-lake of Bogdo. Before we reached this place, and immediately after passing the melon fields, planted by the inhabitants of Volodimerovka, in the lower parts of the steppe, we arrived at a tract, the surface of which had been entirely burnt, and all vegetation checked. The conflagration, which had happened about three weeks before our arrival, proceeded from the country which environs the lake Elton; the fire, as we soon learned to our great disappointment, extended far beyond Mount Bogdo, and spread several hundred versts into the country. We had consequently to travel over a surface quite black from the fire, and on which the extreme intensity of the solar heat fatigued both man and beast. I nevertheless was desirous to proceed at least as far as Mount Bogdo.

After a journey of about thirty versts, we arrived at some very extensive, flat, and low tracts, toward which the steppe on all sides declined: here we observed excellent crops of hay, which had been saved from the conflagration by the exertions and ingenuity of the inhabitants. This country has received from the Tartar Kalmuks the name of Kharakhoi, or black sheep. The low grounds, when inundated in spring with snow-water, to the extent of five or six versts, exhibit traces of a vast lake with numerous bays, as is manifest from the freshwater shells scattered among the grass. I observed water in

one of the pits, which was overgrown with sedge, and farther in a narrow quagmire covered with willows. The *Gryllus Tataricus* flew about here with other insects among the sedgy grafs, and appeared to be indigenous to these environs. The most common meadow-plants were, the *Carduus Tataricus*, *Centaurea Picris*, *Inula dysenterica*, *Gypsophila paniculata*, *Glicyrrhiza hirsuta* and *lævis*, *Lycopus pinnatifidus*, and the like.

From Kharakhoi the steppe again presented a wave-like surface, and a long valley which extended in a southern direction. The soil was dry, argillaceous, and mostly covered with tuft-grafs which had begun to flourish after the conflagration. We were still thirty-five versts distant from the N. W. point of the saline lake Bogdo, or Baskuntshatski, which was remarkable for the streamlets of rain-water which flowed into it from the adjacent steppe. Previous to our arrival at the northern extremity of these defiles, we observed a pit in the form of a basin, or almost conical, which appears to have originated from a sinking of the soil; though neither gypsum nor other fossils were discoverable there. We then proceeded ten versts farther along the western shore of the lake, over a clayey and saline dry steppe, which had been preserved from the conflagration by the intervention of the water; and late in the evening we arrived at Mount Bogdo.

The surface of this mountain was almost entirely scorched; and as far as the eye could reach from its summit, nothing but a black steppe appeared. It was with some difficulty we could obtain the food so essentially necessary for our horses, even on the steep part of the mountain which the fire had spared. These dreary prospects evinced the impracticability of prosecuting

cutting our journey in these desolate regions, which would not only have proved fruitless in botanical researches, but likewise dangerous to the traveller: and from these considerations the attempt was relinquished.

On the 10th of May, I for the last time ascended this singular rocky mountain, which rises in the midst of an immense plain; and while I admired the treasure of excellent salt contained in this white glittering lake, I regretted that private interest should be suffered to suppress this invaluable article, when a very inferior kind, intermingled with Epsom-salt, was used for curing fish. Let it suffice to observe, that some voluntary contractors, even among the merchants of Tchernoiyarsk would readily engage to manufacture and deliver this salt at from five to seven kopeeks a pood, to the Imperial magazines of Tzaritzin, Dubovka, and Astrakhan, without requiring money in advance. But unfortunately this salt-lake has, by partial measurement, been included within the limits of a private manor; and thus it is in a great measure lost to the community.

On the same day we returned to Kharakhoi; on the 11th we proceeded as far as the rivulet Tzarevka; on the 12th to Besrodnaya, where, after crossing the Volga, we passed through Tzaritzin without stopping, and in the evening we arrived at Sarepta.

The whole month of July was devoted to the re-establishment of my daughter's health. It was, however, high time to pursue my journey, and to bid a last adieu to the environs

of the Volga, which had twice in my life afforded me such pleasant and indelible botanical recreations. My intention was to make observations along the borders of the Caucasus, and arrive before winter at the Tauridian Peninsula, in order to make myself acquainted with this newly conquered country. I was at first undetermined, whether I should travel by the new road through the steppe of Kuma, directly to the fortress of Georgia near the Caucasus, or revisit Astrakhan, where I might expect to obtain many remarkable facts. Besides, the latter road, in its whole extent, leads over the former bed of the Caspian Sea ; where, independent of other interesting objects, I hoped to find a rich botanical harvest of rare marine plants, which do not come to perfection till autumn. These considerations at length induced me to prefer that road, especially as the whole steppe of the Kuma had recently been consumed by fire.

The road through this steppe, on which it was formerly proposed to build villages, and establish regular post stages, differs in some respects from that described in the third part of my former Travels, according to the journal of my late pupil SOKOLOF *. This road likewise runs along the bank of the Sarpa, leaves the high country to the right, and extends over

* NIKITA, or NICATA SOKOLOF, afterwards studied at Strasburg, where he obtained the degree of Doctor of Medicine. He chiefly applied himself to Chemistry ; and, on his return to his native country, he was first appointed Adjunct in that science, and afterwards made an ordinary member of the Imperial Academy of Sciences, and Aulic Counsellor. He at length quitted the Academy, and died while in the capacity of Physician to the district of Kaluga. I have survived and lamented almost every companion of my former Travels.

the brooks Softu, Tungutu, Ulaastu, and Alimatu. The measured distance, from the last rivulet to the Sarpa, is sixty versts. Here, however, the road leads over eminences, which are thirty-five fathoms above the level of the rivulet Alimatu; and it is continued in a southern direction on a high country. After travelling twenty versts, we found in a cavity a spring of good water, which flows into the Sarpa. Twenty-six versts from this place, we arrived at another good spring, in the vicinity of the rivulet Khara-Sall, the water of which is somewhat brackish, and empties itself into the Don. The road extends along the Khara-Sall, and after a distance of forty-one versts, crosses the Yakshibai-Sall, which unites with the aforementioned rivulet; and twenty-three versts farther, it leads over the Dshurak-Sall, a rivulet which is provided with a bridge, and likewise flows into the Khara-Sall. This road then runs along the left bank of the Khara-Sall, passes the mouth of the Sagesta-Sall, which, on the right, empties itself into the Dshurak-Sall, and at length crosses the Stshutshie, or pike-rivulet, which falls into the upper part of the Dshurak-Sall. Here the high country presents ridgy eminences, which are forty fathoms perpendicular above the level of the water: at their base, there is an uncommonly beautiful fountain of the purest water. It has several branches, which are called Krasnoi Kolodes, or the clear fountains; and Krasnye Rodniky, or the beautiful springs; being upwards of two hundred and sixty versts distant from Tzaritzin. Beyond this high ridge, which surrounds the principal springs of the small river Sall, that flows into the Don, the high country, or ancient sea-coast, suddenly declines towards the saline river Manysh, and instead of the black soil, I again

met with a saline steppe *. In this steppe, beyond the Manytsh, we arrived at springs called Tsherkaskye Kopany, distant three hundred and seventy versts from Tzaritzin. Twenty-four versts farther, we reached the saline rivulet Kalas, and forty-seven versts thence we found, in a glen of the hilly country, two springs called Byelye Kolotzy, or the white springs: beyond this place we arrived at the Byeloi rutshei, or the white brook, which is fifteen versts distant from the Buivala, a rivulet that falls into the Kuma, and towards which the country gradually rises, till the heights are from forty-five to fifty fathoms above the level of the water. Although these heights, from the low situation of the river Kuma, are inconsiderable when compared with those of the river Sall, yet some calcareous strata, which extend from the promontory of the Caucasus, appear in different places along the eminences.

The distance from Tzaritzin to the old Madshar is about five hundred and thirty-one versts, by this road; a description of which I have taken from a journal in my possession, apparently contributing to ascertain the situation of the old bed of the Caspian Sea.

The high country, or Kraih, as it is called by the inhabitants, emits the springs of the rivers that flow into the Sall, and a

* I request the reader to compare what I have here said, with the description, of the more eastern road of the Kuma, mentioned in the third Part of my former Travels, pp. 586 and 587, according to the observations of the late Dr. SOKOLOF. The situation of the high country, and the saline soil near the source of the Manytsh, perfectly accord with what I have stated in the same passage, respecting the ancient extent of the Caspian Sea, and its connection with that of Mœotia, by the valley of Manytsh. (Vide p. 78. and following of this volume.) The description of my journey from Astrakhan to the banks of the Kuma, will tend still farther to confirm these observations.

still greater number of rivers which fall into the Don. These streams form a confluence in the deep vallies of the sixteen springs which empty themselves into the Sarpa. Besides the Karpovka, the following rivulets issue from this high country; namely, the Donskaya-Tzaritza, the little brook Mishkova, and the two rivulets Akfai, which have also received the names of Yeffaulofskoi and Kurmoyarskoi. It is certainly remarkable that a narrow tract of high country, which towards the East borders on a much lower dry steppe, while it lies considerably higher than the adjacent Volga, should produce so many springs and rivulets which flow throughout the summer.

On the 4th of August, after having taken a most affectionate and grateful leave of my acquaintances in Sarepta, with acknowledgments for all the marks of friendship and politeness evinced towards me and my family, during a residence of more than three months, I returned down the Volga to Astrakhan. On the road to Tshernoïyarsk, the steppe exhibited summer plants similar to those on the banks of the Sarpa. Farther down, where the soil in most places consists of either a fine sandy marl or a pure sand, other plants gradually succeeded. Immediately below Tshernoïyarsk I saw the *Polycnemum monandrum** growing in great abundance. I had formerly observed this plant thinly scattered along the banks of the Volga. — In the sandy country below Yenatævka, the *Tribulus terrestris*, *Corrispermum squarrosum* and *hyssopifolium* grew in such numbers, that in

* PALLAS's Travels, Part i. Supplement, pp. 483. and 94. Plate D. Fig. 1.

some places scarcely any other plant was to be seen. — Throughout the vicinity of Kossikinskoi Stanitz, the steppe is so completely overspread with wormwood, that scarcely a blade of grass is perceptible. There are two or three species of this plant, namely, the *Artemisia Austriaca*, *maritima*, and *contra*, which communicate a bitter taste to the cow's milk. But the beef of this place is of an exquisite flavour, and much esteemed at Astrakhan.

Towards Seroglasofskoi, there are tracts entirely overgrown with the *Peganum Harmala*; a plant which indicates a nitrous soil consisting of sandy marl. Other spots are productive of nothing but the *Anabasis aphylla*, in large perennial tufts; and where the plains are more sandy, the *Hedysarum Alhagi* is in general the only plant. Beyond Samyangorodok the *Pallasia* begins to appear on the sand-hills, as likewise on this side of the Volga. It grows, together with the bushy *Artemisia*, as far as Durnovka, and extends to the hills of drift-sand which border on the river. It is surprising, that these large plants were overlooked by all the botanists who have visited Astrakhan since the time of SCHOLLER. In the whole lower region of the Volga, where the surface of the steppe approaches the edge of the water, and imbibes more moisture, I saw abundance of the *Messerschmidia* in blossom, and some in seed. This is the predominant weed along the roads and banks, as well as in the gardens of Astrakhan, and particularly on old dunghills, where the *Phalena pulchella* fed on it, and was the most common insect.

Before we arrived at the branches of water flowing into the steppe, we came to Sharenoi Bugor, a saline, nitrous hillock,

hillock, which consists of sandy marl mixed with rubbish, and is situated close to the Volga, about five versts above Astrakhan. This hill appeared to me worthy of attention, on account of the rich efflorescence of nitre on its surface. It ascends in a ridge from the steppe, and is highest on the side next the river. Two similar but smaller ridges rise in an almost parallel direction with the former, between the branches of water, on the banks of which melon gardens are cultivated. — The name Sharenoi Bugor seems to have been derived from the Russian word Sharrit, to dig, or turn up the earth, and probably signifies a hillock irregularly broken up. It is often, however, through ignorance, called Sharenoi Bugor, that is, a roasted or broiled hillock : the Tartars call it Kuyok-Kala. That this region has formerly been inhabited, may be rationally conjectured from the heaps of rubbish, the quantity of entire and broken human and animal bones, fragments of earthen vessels, and the like, that are scattered around, though no traces of stone buildings are perceptible. The hill is about two versts in circumference, and abounds with nitrous earth, even to its summit, being covered with such plants as delight in a saline and nitrous soil, and are peculiar only to a few tracts of these regions. The most numerous and remarkable was the *Salsola vermiculata* ; beside which grew in abundance the *Nitraria*, and *Zygophyllum Fabago*, the decoction of which is held in esteem by the Tartars and Greeks, for the cure of venereal diseases ; the *Peganum Harmala*, *Heliotropium Europæum*, *Salsola rosacea*, *baccata*, *altissima*, *kali*, *sedoides*, and *hyssopifolia*, the last of which grows here with reclining stalks. The *Gryllus oxycephalus* and *tataricus* flew in swarms among these plants. The

nitrous earth of this hill, which was formerly used, but has apparently not been mingled with the elixated earth, has again become very rich ; though the loose soil is only a congeries of sand combined with a small proportion of clay, and intermixed with calcareous or saline particles. On places where the earth had been removed, there was a rich efflorescence of nitre, so that twenty pounds weight taken from the surface of the soil, and lixiviated with a solution of pot-ash, after the filtration and evaporation of the lixivium, gave three pounds and a half of pure crystals of nitre. The remaining mother-ley contained scarcely any thing but an alkaline salt, and in the filtrated liquor there was a small portion of calcareous earth which weighed five ounces and a half.

On the 7th of August we reached Astrakhan, where I remained till the 26th, and employed the interval in making useful observations, and collecting remarkable facts relative to this city and its environs.

This semi-Asiatic and important commercial town, which, next to St. Petersburg and Mosco, ranks among the first cities of the Russian Empire, has been so circumstantially described by the younger GMELIN, who resided here many years, that I can add very little new. It deserves, however, to be remarked, that Astrakhan has lately been much improved in elegant houses and public edifices built of stone. The most conspicuous of these are two commercial halls for the reception and sale of merchandize, one of which is appropriated to the Tartar merchants, and the other, which belongs to Koloustor, the Armenian,

Armenian, is for the accommodation of the Persians. Both these buildings are finished in an elegant style of architecture. The high price of timber has induced the citizens of Astrakhan to erect their modern houses either of brick, or a species of freestone, quarried above Tzaritzin, on the banks of the Volga.—This is certainly an embellishment to the place; though its inhabitants are much oppressed by a few wealthy individuals, who privately, and with impunity, monopolize the timber.

The annexed comparative table of the prices of wood will prove how rapidly its value has increased since the year 1786.

			Rubles.	Kopeeks.
In 1786, the fathom of birch-wood was sold at				
from 1 ruble 25 kopeeks to	-	-	1	30
A beam of deal from 3 to 4 fathoms	-	-	0	20
Planks of the same length	-	-	0	20
for roofing, of 5 fathoms	-	-	0	20

In 1792, the price of the fathom of birch-				
wood, was from 3 rubles 75 kopeeks to	-	4	0	
Beams of 3 fathoms	-	-	0	70
of 4 fathoms	-	-	0	80
Planks of 3 fathoms	-	-	0	75
of 4 fathoms	-	-	0	90
for roofing, of 4 fathoms	-	-	0	65
of 5 fathoms	-	-	0	85

In 1793, the fathom of birch-wood was from				
6 rubles to	-	-	8	0
D D 2				Beams

				Rubles.	Kopeeks.
Beams of 3 fathoms	-	-	-	1	10
of 4 fathoms	-	-	-	1	20
of the best quality	-	-	-	1	50
Planks of 3 fathoms	-	-	-	1	20
of 4 fathoms	-	-	-	1	30
for roofing, of 4 fathoms	-	-	-	0	80
of 5 fathoms	-	-	-	1	0

From the disproportionate advance of these prices, it may be easily conjectured, that the dearness of this article did not arise from natural causes, nor from the increased expence of conveyance by the Kuma, from the environs of which Astrakhan is supplied with wood. — Indeed, its exorbitant rise originated in the monopoly of speculating individuals. In consequence of this advanced price of timber, that of bricks has likewise been raised from five to twelve and thirteen rubles the thousand; a higher price than is paid in the two capitals. Not less oppressive is the advance of workmen's wages, on account of the exorbitant price of bread. A common day-labourer, at Astrakhan, is paid from seventy to eighty kopeeks; and a carpenter, a ruble and a half a-day.

The annual variations in the rise and fall of the Volga, are marked at Astrakhan by the Admiralty, as well as by the detachment of engineers. To enable the reader to compare the difference of the highest water, where the river divides itself into numerous large branches, with that formerly observed near Tzaritzin, where it is more confined, I shall give the
highest

highest water-mark of the Volga, near Astrakhan, since the year 1774, for as many years as I have been able to obtain accurate information on that subject.

	Feet.	Inches.
The water rose in 1774, to	7	2
1776,	5	8
1777,	7	1
1779,	6	11
1786,	8	2
1787,	6	7
1788,	8	6
1789,	6	9
1790,	5	10
1791,	6	2
1792,	8	2

No mention is made in the above statement of the accidental rise of the waters, occasioned by the sea-winds from the S. and S.E. which are called here Morana Pogoda. It is only by the impulse of these winds, that the water sometimes inundates the low parts of the city; as the banks or mounds, which the late Governor BEKETOF left in the best state of repair, are now much neglected, though they would require to be raised only to a moderate height. This may also be considered as a tolerably accurate account of the natural variations of water in the Caspian Sea, since its increase and decrease, by the effect of the winds, are in a proportion nearly equal to that of the Volga.

The emoluments of the fisheries in the branches of the Volga, and the not less productive shores of the Caspian Sea,

may be considered as the principal support of the inhabitants of Astrakhan ; for the present state of the commerce with Persia, in that city, rather contributes to its own impoverishment, and to the detriment of the Empire. — It would be difficult to find in the whole world, except on the banks of Newfoundland, a more productive fishery, or one more advantageous to the Government, than those of the Volga and the Caspian Sea united. During the fasts of the Greek Church, and the weekly fast-days, which together amount to at least one-third of the year, this fishery affords the principal food to the whole European part of Russia, and its populous capitals. Many thousands of individuals are employed, and acquire wealth, either by fishing, and conveying the fish on rafts or sledges, or by selling them in the markets. It will doubtless be considered curious and interesting to shew, in one view, the number of large and small fish taken in the lower branches of the Volga, near Astrakhan, and the inlets of the Caspian Sea. Besides these, vast numbers are caught in all other parts of the Volga, as far as the Okka, and likewise in the river Ural *, or Yaik. I can safely affirm, that the round numbers of the subjoined list are rather moderate than exaggerated. This account has been transcribed from the joint returns of the principal proprietors of the fisheries, and those of the public brokers at Astrakhan, who are obliged to certify the exports of fish, by permits. Moreover, the medium of the register of fish taken during four years has been adopted, and only the lowest prices have been mentioned.

* Vide the first part of my Travels, p. 282, and following.

I. *Fishery of Belugen, or the Great Sturgeon.*

In the weirs called Utlhugi, belonging to the city are taken in spring, autumn, and winter	-	15,000
In the fisheries of the late Count, and present Prince BESBORODKO, near the Bufan	- -	8,000
In the waters belonging to the Archbishop	- -	7,000
In the district of the waters of Bibikof	- -	6,000
In that of Beketof	- - -	7,000
In the share belonging to Vsevolodsk	- -	6,500
In the district of Skrypitzyn	- - -	4,000
In the fisheries of the inferior proprietors, such as Vassili Popof, Irvan Beketof, Babaef, and others	- - - -	40,000
In the Persian fishery of Sallian, belonging to Major Varvatzi, in partnership with the mer- chants Telepnef and Tfhurekof	- -	10,000
Thus the total amount of the great sturgeon is	-	103,500

Rubles.

By reckoning each fish at only two rubles and a half, the price of this number will be - 258,750

A thousand sturgeons produce about seven pood and a half of isinglass, so that the beforemen-
tioned number would afford seven hundred and
seventy-six pood; which, valued at sixty rubles
a pood, being the present price of the in-
ferior kind of that article, would amount to 46,560

The

Rubles.

The roe, or caviar, of one thousand sturgeons weighs one hundred pood, or four thousand pounds weight ; consequently the whole would produce ten thousand three hundred and fifty pood, at three rubles and a half the pood 36,225

Product of the fisheries of the great sturgeon 341,535

II. *Fishery of the Little Sturgeon.*

In the weirs of the city are taken in spring, autumn, and winter - - - 30,000

In the waters of the Bufan - - - 9,000

In those of the Archbishop - - - 4,000

In those of Vsevolodsk - - - 6,000

In those of Beketof - - - 10,000

In those of Skrypitzyn - - - 7,000

In those of Bibikof - - - 6,000

In the fisheries of the inferior proprietors, collectively - - - 70,000

At Sallian, in Persia - - - 80,000

In the mouth of the river Sifidrud, in Gilan - 40,000

From the Gyurgen, at Afrabat - - - 40,000

Thus the amount of the small sturgeon is - - 302,000

Rubles.

By reckoning these sturgeons at one ruble thirty kopeeks a-piece, the produce will be - 392,600

One

Rubles.

One thousand small sturgeons produce two pood and an half of the best isinglass ; consequently the amount of the abovementioned number will be seven hundred and fifty-five pood of that article, which, valued at only fifty-five rubles a pood, will produce - - - 41,525

One thousand of these fish yield only sixty pood of roe, or caviare, because many of them do not contain it ; hence the whole produce is eighteen thousand one hundred and twenty pood, which, at only three rubles and an half, amounts to - - - - - 63,420

Produce of the fishery of the small sturgeon - 497,545

III. *Fishery of the Sevrugas* *.

In spring, about seven hundred fishing smacks, or lotke, and in autumn three hundred are employed in the fishery of the Sevrugas, in the river Yemba, and on the coast of Trukhmen. Computing these barks at one thousand, each containing seven hundred fish of different sizes, the amount will be - - - 700,000
 From the city weirs are obtained annually - 50,000
 The branches of the Bufen yield - - - 70,000
 The waters of the Archbishop - - - 30,000

* *Acipenser stellatus*. PALLAS's Travels, Part i. Supplement, page 460. n. 20.

Those of Bibikof	- - - - -	30,000
Those of Beketof	- - - - -	40,000
The waters of Vfevolodsk	- - - - -	35,000
Those of Skrypitzyn	- - - - -	30,000
From the small fisheries in the waters of the city, as well as those of the Kozaks,	- - - - -	100,000
At Sallian, in Persia, the number is computed at		200,000
At Tihetsheni	- - - - -	60,000
Total of Sevrugas	- - - - -	<u>1,345,000</u>

Rubles.

Calculating the price of each fevruga at forty kopeeks, the produce of that species of fish alone will be - - - - - 538,000

One thousand fevrugas produce one pood and a quarter of ifinglafs; making in the whole one thousand fix hundred and eighty-one pood and a quarter, which, if valued at only fixty rubles the pood, will amount to - - - 100,875

One thousand fevrugas produce fixty pood of the best caviare; the whole, therefore, will be eighty thousand seven hundred pood, which, at only three rubles and an half the pood, amounts to - - - - - 282,450

Produce of the fevrugas - - - - - 921,325

The whole value of the sturgeons of different kinds, caught in the waters of Astrakhan and the Caspian Sea, amounts to the

the annual sum of one million seven hundred and sixty thousand, four hundred and five rubles, according to the average price. It may hence be concluded, in what incalculable numbers these large fish, so rich in caviare, are continually propagated in the depths of the Caspian Sea. They proceed in shoals to the mouths, and a considerable way up the current of the rivers without the least apparent diminution of their numbers. This superabundance may be more clearly conceived from the account of eye-witnesses, respecting the fishery of Sallian, in Persia. As the Persians eat no sturgeon, the before-mentioned speculators in fish have rented the fishery of that river from the Khan of Derbent, SHIKH ALI, a son of FETH ALI KHAN, at a certain sum, which of late years has been raised to twenty-five thousand rubles. In the season of their migration there are sometimes, in one day, fifteen thousand sturgeons taken with the hook, at the weirs formed across the water; nay, it is still more remarkable, that if the fishermen are accidentally prevented from working during a single day, the fish accumulate in such numbers at the weir, as to fill the whole channel, inasmuch that those which are uppermost appear with their backs above water, in a river not less than four arshines, or twenty-eight English feet deep, and sixty fathoms wide. The Persian fishery, which has been established by the proprietors only a few years ago, and which, together with the rent, amounts to an expence of 80,000 rubles, is said to produce annually upwards of 200,000 rubles. It might be still more lucrative, if the injudicious fishermen would preserve the great number of fish, instead of throwing

E E 2

them

them into the sea as useless, after having collected their roes and air bladders.

Independent of the abovementioned produce of the sturgeon-fisheries, the smaller species of fish, such as the carp or Sfasani, the pike or Sudaki, and shads or *Silurus*, in Russian Somi, caught in these fisheries, may be valued at half a million of rubles. This sum is produced partly by the sale of the fish, and partly by the price of their fat. Besides, the number of seals taken in the Caspian Sea ought to be included among the productive branches of industry.

The most valuable production of the sturgeons is the isinglass prepared from their air-bladders. This article is principally exported from St. Petersburg to England, where it is used in large quantities, in the beer and porter breweries. The English supply the Spaniards, Portuguese, Dutch, and French, with this commodity for clarifying their wines. According to the list of exportations printed by the English Factory at St. Petersburg, there have been exported in British vessels, from 1753 to 1758, between one and two thousand pood of isinglass: from 1769 to 1786, from two to three thousand; in late years usually upwards of four thousand; and in 1788, even six thousand eight hundred and fifty pood of that article. The exportation to other countries has also amounted, within these few years, to above one thousand pood. The large and almost incredible demand has, at the same time, tended to increase the price of the different qualities of this commodity at Astrakhan itself; and on the exchange of St. Petersburg, where isinglass of the best quality, so late as the year 1778, did

not exceed the price of thirty-fix rubles a pood, it has lately been advanced to ninety rubles.

No caviare was exported in English vessels till the year 1781; and only twenty-fix pood of that commodity were exported in 1782; but the increase of this trade was so rapid, that in the following year one thousand one hundred and fifty-one pood, in 1784 one thousand fix hundred and twelve, in the two subsequent years above one thousand, in 1787 nearly one thousand fix hundred, in 1788 four thousand, and in 1789 eleven thousand two hundred and fifty-four pood were exported; but in 1790 only twenty-five pood, and in 1792 three thousand seven hundred and eighty-one pood. The exportation to Italy has also amounted to upwards of ten thousand pood, within the lastmentioned years, exclusive of about three thousand pood sent to other countries; and a still larger quantity through the ports of the Black Sea and the Sea of Azov.

The price of isinglass of the worst quality has within the last years been above forty rubles, and that of the best quality upwards of ninety rubles the pood, at St. Petersburg; while the price of caviare has advanced to above five rubles the pood. From this statement we may conclude, of what importance the fisheries of Astrakhan are to the commercial interests of the Russian Empire.

The abovementioned remarks, with respect to the advantageous inland trade of Astrakhan, cannot be applied to its foreign commerce, particularly that with Persia, which is far from

from being profitable to Russia. This assertion will be verified by the following account :

We pay annually to Persia a heavy tribute for the raw silk used in our manufactories ; while this article might be produced in large quantities, in the southern provinces. It may be computed, upon an average, that there are annually imported into Russia eight thousand pood of silk, chiefly from Gilan in Persia. Of this silk there are frequently between six and seven thousand pood of the best quality, which is purchased at two hundred rubles, and the inferior sort at one hundred rubles the pood. The price of the raw silk of Shamaki varies, according to its quality, from one hundred and thirty-five, to one hundred and seventy rubles a pood. Though the imported silk pays no duty, yet its quantity and value is entered at much less than the real amount. As it will appear from the following investigation, that the imports exceed our exports, and as the silk is purchased at a lower price for ready money, consequently the greatest part of our specie is sent out of the country for this commodity, and for ever lost to the Empire. The sum thus secretly and annually exported to Persia for merchandize, is not less than one million of rubles ; which is paid partly in ducats and partly in rubles. It is, however, still greater, if we superadd the rents paid for the fisheries in Persia.

It were to be wished, that the Armenians and Georgians, or Grusines, who are settled at Astrakhan, and on the banks of the Terek, would cultivate silk with more assiduity. They ought to be supported and encouraged by every possible means, especially by premiums and rewards, which certainly would not be
lost

lost to the State. The Georgians would readily emigrate in numbers to our frontiers, if Government would facilitate their settlement, by advancing them small sums of money for a certain time, and granting them good lands, particularly in Taurida. By these means the Southern provinces could be peopled with active and peaceable inhabitants, who might be employed in cultivating the vine, and raising that useful insect, the silk-worm.

The importation of raw and spun cotton, and madder, is not less detrimental to the circulation of specie in Russia. As these articles pay twenty-five *per cent.* duty, the custom-house registers are still more inaccurate with respect to their importation; because, from these it would appear, that there are annually imported only from three to six thousand pood of cotton yarn*, and about one thousand pood of cotton wool. But it is a truth well ascertained by all the merchants of Astrakhan, that there are twenty thousand pood of cotton annually imported from Boukharia, by the spring traders bound for Mankishlak. Only one-eighth part of this quantity is Boukharian and Masanderan cotton, consequently the greatest part of it is imported in yarn. The wages for spinning cotton yarn, compared with the price of the raw material, are

* The entries in the registers of the custom-house for the year 1789 are, of spun cotton five thousand and ninety-five, raw, one thousand one hundred and seventy-four pood;—for the year 1790, five thousand five hundred and nine pood of spun cotton, two thousand seven hundred raw;—for the year 1791, spun, three thousand five hundred and eighty-one, raw, one thousand three hundred and two;—in 1792, spun, six thousand two hundred and fifty-seven, raw, 474;—in 1793, Persian cotton yarn, eight hundred and six, raw, four pood.—From Boukharia, by the port of Mankishlak, two thousand three hundred and forty-one pood, spun, two hundred and ten raw;—from Khivan, with the caravans by Gyuryef, thirty-six pood.

in the proportion of thirty-five to eleven. In this respect, we cannot estimate too highly the obligation we are under to the colony of Sarepta, which has cultivated great quantities of cotton wool, and employed the German colonists on the banks of the Volga, in spinning cotton yarn. Thus the females in those colonies are furnished with proper employment, their industry is encouraged, and the money remains in the country. The colonists manufacture principally the cotton of Masanderan, which, though of a more yellow colour, is softer and more tenacious in spinning than any other species, and is purchased at thirteen rubles the pood; while the cotton yarn of Boukharia is bought, according to its quality, at from thirty to sixty rubles a pood. The Nagay women at Astrakhan spin annually about one hundred pood of much finer and better twisted cotton yarn, which sells at from eighty to one hundred rubles the pood. Among the Boukharian cotton yarn, there is sometimes a light brown kind, from which the undyed nankeens are manufactured; and which produces the best effect in embroideries on muslin. I have been assured that the plant of this species of cotton has a blue flower.

It appears from the registers, that the madder annually imported into Russia amounts to between four and seven thousand pood*. But all the respectable merchants of Astrakhan agree,

* According to the custom-house books for the year 1789, three thousand eight hundred and sixty-two pood were imported; in 1790, six thousand four hundred and sixty-two pood; in 1791, four thousand nine hundred and ninety-two pood; in 1792, seven thousand five hundred and fifty-nine pood; in 1793, six thousand seven hundred and sixty-nine pood.—Independent of these quantities, the register of the tolls established near Kizlar, for the year 1792, contains the entry of two thousand eight hundred and sixty-eight pood, which proves that here likewise a much larger quantity is imported.

that

that there are imported annually from ten to fifteen thousand pood, exclusive of ten thousand pood obtained by the way of Kislar; the price of which varies, according to its quality, from eleven to fourteen rubles a pood. I have even been assured that in the year 1793, there were imported at Astrakhan five cargoes of this article, each containing five thousand pood, which would induce me to believe, that the export trade was more considerable in that year than at any former period.—It is certain, however, that the two commodities, cotton and madder, contribute much to render the balance of trade disadvantageous to Astrakhan. If we superadd eight thousand pood, and upwards, of raw cotton yearly imported by the Baltic, and that we pay for different manufactures of cotton, to foreigners, upwards of a million and a half of rubles, the necessity of encouraging the culture of this useful plant, as well as every kind of manufacture of cotton, will be sufficiently obvious; for it is a truth well ascertained, that scarcely one half of this article is disposed of by barter in the markets of Siberia, to the Chinese and Boukharians. On the other hand it is also certain, that the cultivation of cotton bids fair to prosper on the banks of the river Terek, as well as in the Tauridan peninsula.

To these principal articles of importation may be added a fourth; namely, the galls, of which, in some years, we receive upwards of three thousand pood; the lowest price is twelve rubles the pood of forty pounds. Our oak-trees seldom produce this excrescence, and we have but few oak forests in the Southern climates. A small quantity of galls may be collected in Taurida; but it would be insufficient to render the im-

portation of that commodity unnecessary. This article is indeed indispensable to our tanners and dyers, till we discover an indigenous production which possesses similar properties for dyeing black. Perhaps the importation of galls might be considerably diminished by the substitution of the *Andromedæ*, in Russian, Bolotniki, which grow abundantly in the northern morasses, and the superiority of which, in dyeing silk of a black colour, has long been admitted.

Independent of the more considerable objects of importation, it is probable that the amount of manufactured and various other goods annually received from Persia may not exceed one hundred thousand rubles.—It must indeed be confessed, that all the Persian stuffs, such as silk, mixed silk, and cotton, are infinitely more durable and beautiful than those of Turkey; besides which they are purchased remarkably cheap, excepting the small quantity of Indian goods we obtain by the way of Persia; such as the fine chintzes, called Kalenkor, and the excellent undyed cotton cloth, called Maderpok. Among the stuffs of Persia, those of silk and half silk, in stripes of various colours, called Kutni and Aladshi; those interwoven with gold, or Isarbati and Dibi; other stuffs distinguished by the names of Kanavati, Kitai, and Muckoyari, besides the Burmets, Bafmi, Bafi, Aladshi, and others manufactured of cotton, are the best and in most general demand. We receive the very inferior cotton stuffs worn by the common people, both from Boukharia and Persia. The fine and valuable woollen shawls of various colours, which are held in such high estimation by the European ladies, and are worn round the head and waist in Persia, are imported, though in small quantities only, from Tybet and Kyshmir, or Kashmir. But we purchase shawls at
much

much lower prices from Persia, than after they have passed through the third hand from Turkey. Mr. ALEXANDER AGATHI, director of the school at Astrakhan, who has travelled to Kyshmir, informed me that these shawls are manufactured not only of the finest goat's wool, obtained by combing the animal, but likewise from the silky wool of the sheep of Kerman and Kyshmir, which, in lustre and beauty, surpasses the whitest silk. In short, the white, and next to them the striped shawls of seven colours, are considered as the most valuable.

We receive few commodities of any importance from Persia, except the beforementioned. The following enumeration will comprise almost the whole of the other articles of commerce worthy of notice, which we import from that country. A few otter-skins and other furs; lamb-skins brought chiefly from Boukharia; a small quantity of *Galbanum*, *Gum Ammoniac*, saffron, and *Affafætida*, which last costs from three to seven rubles the pood; walnuts, a thousand of which are sold for less than one ruble; some confections, and a few dried fruits, such as dates, Kyshmish, or small raisins without stones; large raisins; pistachio nuts; almonds; Sheptala, or dried peaches; prunes; Alitsha, or small tartish prunes; fresh and dried truffles of Baku, garlic, and rice. I had almost omitted to mention the Oriental Turkoises, which are sold in great numbers, and at low prices, by the merchants of Astrakhan, but are seldom of a considerable size, or without some defect. They are mostly worn in rings, and clumsily set in tin. I purchased a single Turkois for two hundred and fifty rubles; it was of a short conic form, and upwards of an inch in diameter. This stone would have been of great value, had it

been free from a defect in the colour, near its edge. The Indians who reside here also occasionally deal in emeralds and rubies.

With respect to our exports, we have made but very slow advances. Besides, the commodities fit for our commercial intercourse with Persia are such as we are obliged to procure from foreigners, and consequently cannot be computed in the balance of trade. The most considerable and beneficial export, for some time past, has been cochineal. One thousand pood of this merchandize are annually exported from Astrakhan: it may be estimated at three hundred rubles a pood. The Armenian merchant NIKITA KOLOUSTOF, alone, formerly exported in one year eight hundred pood of this valuable dyeing material. Indigo has likewise been a good article of commerce; but since the despots of Avganie are in undisturbed possession of Kyshmir, Multan, and other Indian provinces, it is brought in abundance from Lahor to Persia, and thence even to Astrakhan, where it is sold at from sixty to eighty rubles the pood. Though it is apparently inferior to the best, and resembles only the middling kind of Armenian indigo, yet, in the opinion of experienced dyers, it is of a superior quality, and imparts a much stronger colour, if attention be paid to keeping it a longer time in the vats. The foreign velvets, sattins, and woollen cloth, as also plush and linen of different kinds, are, next to those abovementioned, the most considerable articles exported. —In cloths, the exportation may amount to one hundred and fifty thousand rubles; in velvet, from fifteen to twenty thousand rubles; and the value of all the remaining articles together does not amount to forty thousand rubles. Perhaps the Russian leather, or Yukhten, may produce from ten to fifteen thousand

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rubles

rubles of this balance. Sugars of different kinds are exported to the value of twenty thousand rubles. The amount of brocades, camblets, taffetas, paper, small looking-glasses, and several articles of iron and copper, as well as spices exported from Astrakhan, is altogether less than that of the lastmentioned merchandize. Pig and bar iron would be a very lucrative article of commerce, especially as it is a native production; but HERACLIUS, the Tzar of Georgia, having in the year 1789 obtained permission for his Armenian factor TARUMOF to export, during four successive years, forty thousand pood of iron free from duty, the merchants, on account of the high duty of sixty kopecks a pood, were unable to trade in this commodity with any advantage. As therefore the balance of trade with Persia is against Russia, it is worthy of inquiry, in what manner our commercial intercourse could be rendered, if not profitable, at least less detrimental to the interests of the Empire; for, in my opinion, we possess the means of effecting that desirable purpose.

At present, all exported foreign merchandize are exempt from duty, and those only subject to imposts which are produced in the Empire, and which generally are but of small value; so that this branch of the revenue does not produce much above ten thousand rubles annually. A sum so inconsiderable might be readily sacrificed by Government to the encouragement of commerce; yet this sacrifice would be insufficient, though the exportation of iron should be granted duty free, and no monopoly similar to that beforementioned should be allowed to any individual. Our merchants of Astrakhan are in competition with the English and French factories, who

who supply the Persians with every article of European manufacture in abundance, and at the most reasonable prices. — Although the land-carriage of goods by Aleppo is expensive, yet the duty is proportionally less, being charged at the rate of three *per cent.* at Smyrna, and ten *per cent.* at Erzerum. On the contrary, the Russian merchant, besides the expence of freight and land-carriage, together with the loss to which he is liable from the fluctuating course of exchange, is obliged to pay a duty of twenty-five *per cent.* on all foreign goods imported; and these form the principal part of the exports. If, therefore, he wishes to rival the other European merchants in Persia, whence they obtain the best silk, or to engross this trade by lower prices, that object can only be accomplished by a drawback on the duties paid in the sea-ports of the Baltic. Similar judicious measures are frequently and successfully adopted in England. Thus the Russian merchant would be enabled to sell foreign goods cheaper to the Persians, to alienate them from the other European factors, and gradually bring the whole silk trade of Persia to Astrakhan. This would be an object the more desirable, as the English obtain their best silk from Persia; but if the abovementioned plan were adopted, they would be obliged to purchase it in our markets.

It is however scarcely to be expected, that during the free trade, our merchants, who consist of so many different nations, will co-operate to accomplish this patriotic purpose, and deal with integrity towards each other, as well as to the general interest of Russian commerce. They will appropriate the drawback to their own private interest, and be unconcerned whether this remission of duty may be of any future advantage. Hence
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it would be necessary to give this trade exclusively to a chartered Company of merchants, possessing experience and integrity, and to be regulated by Directors subject to the controul of the Commercial College. The fund of this institution might be raised by moderate shares, so as to admit the inferior merchants to a participation of the profits; while the annual election of the Directors might be decided by a majority of votes. This Company, in which foreign merchants may also be incorporated, should have permission to carry on the exclusive trade to Persia. They should not be entitled to export foreign merchandize from Astrakhan, but should be obliged to sell such goods by public auction; while the Directors ought to render an annual account to the Company, respecting their transactions and profits. Such an institution ought to be protected against every kind of oppression, both domestic and foreign; and all vessels of the Crown, as well as of private traders, should be prohibited from interfering with their trade. Among other privileges, this Company might be permitted to establish a number of industrious Persian emigrants for the culture of silk, madder, and other profitable branches of commerce, in colonies either in the government of Astrakhan, on the banks of the Terek, or on the desert islands of the Caspian Sea. The Isle of Ronas would perhaps be preferable in this respect; as probably the Masanderan sugar-cane, and the indigo of Lahor, might be successfully cultivated there. Permission might be given to this Company to extend their trade to India, Kyshmir, and Tybet, by caravans, when at some future period it should acquire sufficient stability. We might thus obtain, by immediate intercourse, the beautiful and costly wool of Kerman and Kyshmir; the

the rhubarb and musk of Tybet ; the manufactured goods, indigo, diamonds, and spices of India : while a part of these commodities might be disposed of to advantage in Persia, on their passage from those countries. With similar profit we could carry on this trade with cochineal, good lackers, velvet, steel, and iron, in the heart of India ; and the Company would consequently have less occasion to export cash, which at present it is impossible to prevent among the numerous smugglers. This great object could be the more effectually attained, as the cheaper purchase of merchandize in the gross, and the drawback received from the Crown, would enable the Company to effect a very advantageous barter. Such a chartered body might also profitably undertake the exportation of soda, or fossil alkali, especially if it were conveyed the nearest way to Azov, and thence shipped for foreign markets. The ashes of the marine plants, which grow in abundance on the extensive steppes round the Caspian Sea, would furnish a material for the manufacture of soda in large quantities. I have often recommended the prosecution of this branch of trade, and even lately urged its importance in the Transactions of the Free Economical Society of St. Petersburg : I was also the first who suggested a plain and easy method to ascertain by a candle, and from the melted ashes, those marine plants which yield soda in the greatest quantity, and of the best quality.

The marine of the Caspian Sea at present consists of two frigates of twelve guns each, two cutters, and a transport. There are besides fifty-six merchant vessels, *viz.* a pink, a transport,

transport, five galliots of about thirty lasts burthen each, and forty-eight schooners from ten to thirty or forty, and one of sixty lasts. Besides these, there are one hundred and thirty-eight roshiven, or flat-bottomed vessels, employed in fishing and taking seals; as also in the Mankishlak * trade with the Trukhmenes and Boukharians. If the trade of the Caspian Sea should at a future period become more flourishing, the number of vessels, which could be built at a low price in the government of Kasan, must necessarily be increased.

I did not think my time would be ill spent, during my stay at Astrakhan, by inquiring into the means employed in the East for dying madder red; especially as I had an opportunity of obtaining accurate information on the subject by a friend, who had advanced money for the establishment of a work for dying cotton of that colour. I shall here communicate my remarks, which may serve to correct a former description, printed in the Journal of St. Petersburg, and the periodical work, called in German, "*Nordische Beyträge*," or Northern Contributions. This account is the first that has appeared in print, relative to an art that has formerly been kept a great secret.

A quantity of cotton yarn is usually prepared for dying on a Saturday, in the following manner: It is first soaked in the fat of fish, previously saturated with a solution of the salt of soda

* During the late Persian war this squadron was considerably increased.

called Kalakar ; in this state it is left in a heap till the succeeding Monday, during which time it grows remarkably hot.

On the Monday the yarn is rinsed, dried, and again immersed in this fat emulsion ; and on Tuesday that process is repeated a third time, after which it is hung up to dry. The four following days of the week it is repeatedly steeped in new lixivium of simple Kalakar.

Having undergone these processes, the yarn receives the first olive colour from the leaves of the Belge, or the *Cotinus* of Linnæus. In order to dye ten pood of yarn, three pood and thirty pounds of the leaves of the Belge, that is, fifteen pounds of leaves to each pood of yarn, are boiled in large kettles containing from forty to forty-three Russian vedros, or eimers *, of water. This decoction is filtered through sieves, while the kettles are cleansed for the reception of the purified liquor, in which a pood of alum is dissolved. Into this liquid dye the yarn is dipped by skeins, in small cups or pots, then hung up to dry, afterwards washed, and again dried.

The yarn being thus prepared, the workmen then proceed to give it a red dye. To every pood of yarn an equal quantity, or somewhat less, of ground madder, which has previously been mixed with half a Russian vedro, or about thirteen pints English measure of blood, is put into every kettle. After boiling this dye the yarn is immersed in the preparation, and suffered to boil up with the liquor.

When thus perfectly dyed, it is dried and afterwards placed in pots containing alkaline water, in which it is completely

* See the explanation of this measure, p. 40.

immersed

immerfed and allowed to fimmer, while the liquor, which boils over and runs off by a fmall gutter affixed to the edge of the veffel, is continually replaced by a frefh folution of the foda.

After the yarn has been thus boiled, again dried and washed, this complicated operation is generally finifhed in three weeks. It is affirmed that the Turks conclude their procefs by again foaking the dyed yarn in oil, to give it a more beautiful colour and luftre, as well as with a view to increafe its weight: in this ftate it is preffed, and allowed to dry. They commonly ufe the oil of olives inftead of the fat of fifh; but in general every kind of oil or liquid fat, which forms a faponaceous mafs with the folution of foda, is proper for that purpofe.

The price of dying materials always varies according to the ftate of the market, and other circumftances; and it requires a large capital to fupport fuch an eftablifhment. Of the madder obtained from Perfia and the environs of the Terek, that with fmall roots is preferred; it is fold, according to its quality, from eleven to fourteen rubles the pood, and afterwards reduced to powder. The bruifed leaves and ftalks of the Belge, or *Cotinus*, are brought from Kiflar, and coft from eighty to one hundred kopeeks, or one ruble the pood. Unlefs the cotton yarn be previously dyed with thefe leaves, or the galls which were formerly ufed, it will acquire only a pale and not a durable red. Soda of a good quality alfo comes from Kiflar, and varies in price from thirty to one hundred kopeeks a pood. The beft fort, which is dry and hard as a ftone, was at this time fold at only thirty kopeeks. On being diffolved, all the particles of carbon with which it is mixed are precipitated, and by skim-

ming the solution becomes perfectly clarified : the sediment is thrown away as useless. A pood of soda is dissolved in a vat of forty vedros, or about one hundred and thirty English gallons.

For every pood of cotton yarn the dyer is paid from twenty-five to thirty-six rubles, including materials and the price of dying : he returns from three to six pounds overplus to each pood ; because the yarn has acquired so much additional weight from the colour.

To each pood of yarn are used four pounds of alum, fifteen pounds of *Cotinus* leaves, fifty-eight pounds of the fat of fish, one pood of soda, and one pood of madder. Two boilers for the decoction of the Belge leaves and madder, both heated by the same fire, and four large pans for the soda, are sufficient to dye five hundred pood of yarn in one year. It must, however, be remarked, that the dying process cannot be continued in winter, and it is likewise interrupted by rainy weather.

The culture of the vine, introduced at Astrakhan in the reign of Peter the Great, is in a progressive state of improvement, though the climate and soil are rather unfavourable. The vine is at present not cultivated merely for the fresh grapes, but likewise for the production of wine. The grapes are packed with red millet in small casks, which are suspended by chains in wooden cases, and thus conveyed to the Court and to the capitals, where they are sold to great advantage. The vineyards, formerly cultivated at the expence of the Crown, have been sold by public auction ; and hence, as well as by the im-

portant plantation of the late Governor of Astrakhan, and afterwards Senator, NIKITA AFANASSIEVITCH BEKETOF, the cultivation of the vine has received new vigour.

On the 21st of August, I accompanied the present Governor, Major General SKARSHINSKY, on a visit to the new establishment in the isle of Tsherepakha, which is inclosed by banks. In our excursion thither, we passed along the Kutum, an arm of the Volga, which branches from that river near Astrakhan, and is provided with a bridge. This isle, which belongs to M. DE BEKETOF, is formed by the new Kutum, a small collateral arm called Tsherepakha, or the turtle, and the great Bolda, into which there is a conflux of the old and new Kutum. It contains some elevated ridges, and a great part of it has been gained from the water by inclosure; there remains, however, a very large but shallow marsh, which is connected with the Bolda. The proprietor had an opportunity of raising these dikes at a very small expence, by employing the Turkish prisoners taken in the war before the last, and transported to the banks of the Volga. By such useful labour, the water has been drained from nearly eight hundred desættines of land; besides the extent of dry soil, which previously amounted to about seven hundred desættines.

Two villages, Natshalovo, or Beketovka, and Tuma, together contain a population of about two hundred males, who are entirely employed and supported by the lord of the manor. Near Beketovka are the brick buildings belonging to the proprietor of that village, consisting of an elegant church, with the family vault on the highest hillock; and on the northern side of the rising ground is his dwelling-house, with a large central hall,

hall, illuminated by a highly suspended lantern. On the southern side, there is a wall that extends to the church, with two turrets, and shades the capacious and convenient vaulted cellars of the dwelling-house. There are at present in these cellars fourteen thousand vedros of wine, the produce of the Governor's vineyards, ready for sale, and partly kept in uncommonly large casks. The oldest, which is preserved for the use of the proprietor's family, is said to be the produce of the year 1772, from the Hungarian vine, and resembles a good French wine. It is, however, easily perceptible that this wine is indebted for its preservation to a proportionate addition of brandy. Next to this, the wine made in 1774, of grapes without stones, called *Kyshmish*, deserves the preference. Of the wines intended for sale, the oldest were of the vintage of 1780. No wines are disposed of here, unless they be three years old, and those longest kept are the dearest; for instance, that of 1786 is sold at four rubles the Russian eimer, or vedro, that of 1784 resembles *Vin de Grave*, is made of *Kyshmish*, and sells at three rubles and a half; and the younger kinds are sold at two rubles and a half the eimer. There are annually pressed here from four to five thousand eimers of wine, and the oldest casks are always filled up from those succeeding in the order of time. The grapes are pressed in an appropriate wooden building.

Immediately behind the church and dwelling-house, towards the West, there is a small vineyard and orchard, which contain vines for the use of the household, and are watered by a mill with several machines for raising the water above the level of the soil. There is also a circular windmill, with a horizontal wheel and sails, but which is not in use.

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The principal vineyards, viz. an old one and another newly planted, are situated in a southern direction to the former, and in a parallel line from East to West, on two eminences exposed to the South. The more southern, and older vineyard is thickly planted, and so abundantly productive of grapes, that it delights the eye of the beholder; some branches of which, with thick skins, measured almost three spans in length, and those called Kyshmish, two spans. This vineyard is provided with three mills for watering the ground, and the central mill is erected on a base of brickwork, for the purpose of raising the water to the highest parts. The more northern and younger vineyard is situated somewhat higher; it is embellished with a pleasure-house, and has four windmills for raising the water. The vines, though planted seven years ago, have not yet overspread the vineyard, in consequence of their being placed at so great a distance from each other. They produced very few grapes, and the foliage was parched by heat, except in one quarter, which, by way of experiment, had been plentifully manured in the present year. The injudicious practice of planting too thin, is generally imitated by the new vine planters of Astrakhan: it is unquestionably less advantageous than the close method, by which the soil is soon overshaded, and consequently requires less watering.—The old vineyard contains from eighty to ninety thousand square fathoms, but the new one only sixty thousand. The plants of the old vineyard are disposed in circular and semicircular walks and espaliers. Those of the other are expanded in the form of a mushroom, or umbrella. Every kind of grape which this country produces may be found here, but the most numerous are the Hungarian,

Hungarian, those with a thin skin, and the different sorts of Kyshmish, which are reckoned the best, and are most easily pressed. — The intermediate low ground was formerly planted partly with vines, and partly with other fruit-trees. But since the water, raised for fertilizing the soil of the vineyard, has been collected in ditches, and reconducted into this vale, it has become so much impregnated with saline particles from the more elevated parts, that all the trees have perished, and there now only remains the *Zygophyllum*, several species of the *Salsola*, some rushes in the low and marshy part, and the *Statice Scoparia*, of which brooms are manufactured in Astrakhan.

Beside the vineyards, there are also established on this isle, a garden, and a mulberry plantation, by the leaves of which a number of silk-worms are nourished, so that from fourteen to twenty pounds of silk are annually produced.

All these plantations are cultivated by the vassal boors, each of whom receives for his labour, twelve rubles, and three bags, each containing forty pounds of flour, every year.

There are besides three vine dressers appointed as overseers.

The desert and saline soil of Therepakha produces tamarisks, abundance of the *Zygophyllum*, *Anabasis*, *Salsolæ* of all kinds, the *Messerschmidia*, *Medicago fativa*, *Schænus aculeatus*, and *Asparagus verticillatus*. The leaping *Jaculus* is uncommonly numerous here; because these animals increase undisturbed by beasts of prey, and feed on water melons and other garden fruits. Pheasants have been brought to this country, where they have greatly multiplied. The melon fields have been planted by the boors, who find a profitable market for this fruit at Astrakhan. They also cultivate white mustard, a
part

part of which is converted into oil, and a part sold in feed. The wood, of which frames are made to support the vines, is brought from the environs of Tzaritzin; and the peasants are in a great measure supplied with fuel from the cuttings of the vine.

I shall on this occasion give a general description of the manner in which the vine is cultivated at Astrakhan, in order that the reader may compare it with that of other countries. The first introduction of this excellent plant, as mentioned by OLEARIUS, in his Travels in Persia, was an experiment made by an Austrian monk, who, in the reign of the TZAR IVAN VASSILIEVITSH, planted a few Persian vines for his own use, at Astrakhan. When it was found that these vines flourished, the Tzar, in the year 1613, caused the first vineyard to be planted in that city. PETER THE GREAT, who neglected nothing that could contribute to the prosperity of the Empire, encouraged the cultivation of the vine, and invited expert vine-dressers and coopers from other countries, whom he encouraged by liberal salaries. Notwithstanding these patriotic measures, the culture of that useful plant was unsuccessful, till the year 1752, when the Hungarian Major PAROBITSH was appointed Inspector of the vineyards at Astrakhan. During fifteen years, while employed in this business, he ascertained by experiments, conducted with zeal and ability, the best method of cultivating the vine in this country; and thus considerably improved and increased the Imperial vineyards. We are indebted to him for the principal sorts of vines which he imported from Persia, Hungary, and other countries. By his laudable example, and the obvious advantage arising from this branch of industry,

industry, many private individuals have been induced to plant vineyards, so that there now exist several hundreds in and about Astrakhan, some of which are the only means of support to their cultivators.

The vineyards of Astrakhan are, in general, planted contiguous to the arms of the Volga, which surround and intersect the city, that, in a climate where it seldom rains in summer, they may be the more easily watered. For this purpose machines, called *Tshigiri*, have been constructed for raising the water according to the Eastern method; but, in general, they are attended with considerable expence, as they cannot be worked without the aid of windmills. As the ridges or eminences of the isles and the steppe, by the Russians called Bugry, run almost uniformly from East to West, all the vineyards established on these eminences have a similar exposure. The vines are planted in parallel trenches, called *Borofdi*, which are about a yard deep, and forty-two inches broad, so that they serve in summer to convey the water to the roots of the plants, and to defend them against the cold of winter. These trenches are intersected, at intervals, by transverse furrows, called *Progonny*, with wooden gutters to convey the water from one canal to another. A certain number of such trenches are collectively called *Osmukha*, or in the Tartar language, *Salmak*. The ridges between two trenches are here denominated *Uvalik*. The name *Osmukha* seems to indicate, that eight trenches are always included in one division; but the vine planters do not strictly adhere to this number. The distance of the vines from each other, in these trenches, differs according to circumstances. In the old vineyards the plants

are only about one arshine distant. In the new plantations, on the contrary, they are three arshines asunder. The vines are three or four arshines high in the old vineyards; they are arranged in espaliers, and in the new plantations in double espaliers, which run along both sides of the trenches. Some proprietors also dispose their vines in covered walks and arbours. The old method is called *Posadka Sploshnaya*, or the close plantation; and the new mode *Posadka Shatrovaya*, or the arbour plantation. The latter certainly admits more air and sun to the grapes, and allows more room for the roots of the vines to spread; but it renders the more frequent watering of the mould necessary, and is detrimental to the growth of the vines, till the roots have acquired a sufficient degree of strength.

The number of the different species of grapes cultivated at Astrakhan is very considerable, and deserves a detailed description.

The first and best kind is called *Kyshmish*, or the grape without stones, and was probably introduced from the shores of the Persian Gulf. There are two varieties of this species, one producing round, and the other oblong fruit; both of a white colour; the former acquires a shade of green, and the latter has a yellowish tint, at the time of maturity. Both sorts have a similar foliage; but the leaves of the round kind remain green till their fall. They produce large bunches of small, delicious grapes, with a thin skin, which are consequently too delicate for conveyance, and more profitable for the wine-press. Some traces of stones are indeed observable in these grapes, but they are so small, and lie so close to the stalk, that they are not perceived on eating the fruit. The *Kyshmish*

are the earliest grapes of this country, being ripe even at the end of July, or beginning of August; and they, as well as the Hungarian grape, produce the best wine.

The second species of grape is called Skorospeloi, or the early sort. It is a white, round fruit, with a thin skin, ripens about the same time as the Kyshmish, has a delicate flavour, and is almost exclusively used at table, being rarely converted into wine.

The third species is the Hungarian grape, of two varieties, a white and a black. The former grows in almost every vineyard, but the latter is very scarce. Both are round, with a thin skin, and remarkably sweet. They ripen in August, when they burst and begin to drop their juice. On this account they are unfit for the market; and being generally pressed, they yield wine of a superior quality. The vines of this species have short articulations, and the lower side of their leaves is covered with a white down.

The fourth is the thick skinned grape, or Tolstokoroi. This term implies a large, round, white grape, covered with a thick skin; it may be preserved for a long time, and is peculiarly calculated for exportation. It ripens in the month of August; all the vineyards abound with it; and it is ranked among the grapes for the wine-press.

The fifth species is the long, white grape, or the Byeloi dolgoi, which takes the name from its exterior appearance. It is tolerably palatable, not very common, and therefore principally used at the table.

The sixth is the common black species. It produces pretty large, round grapes, which begin to ripen in August, but remain on the vine till October.

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The seventh is distinguished by the name of the fat grape, or Shirnoi. It is round, covered with a light-blue skin, and contains a rich juice. It does not remain long on the vine, bursts when ripe, and is unfit for carriage. The vine itself is remarkably thick; a circumstance by which it is distinguished from all others.

The eighth species is the muscadel, or Dushiftoi, which produces white and red fruit. Both consist of a round grape, with a thin skin, and possess a similar delicious flavour. But not being abundant, they are not pressed for wine. The white species becomes somewhat yellow as it ripens; but the red is of a bright colour, and, as it were, frosted. They come to maturity in August.

The ninth sort is commonly called Kasbinskoi, from the name of the city of Kasbine, in Persia, whence the first of these vines were imported. This species has three distinct varieties. The first is called Bokalnai, or Rish Babai, from the cylindrical form of its white grapes, which are smaller towards the centre: they are uncommonly large, and frequently an inch long. The second is the red kind, or Safianoi, a grape equally large, of an oval form, and transparent red colour. The third is the black grape, not quite so large; it is oval, and of a dark brown colour. These grapes are esteemed for their size more than their flavour, which is not very agreeable; and being cultivated not only for the table, but also for exportation, on account of their thick skin, they may be long preserved.— Three three varieties ripen in September; and their foliage is larger than that of any other species.

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The tenth kind, called goats' teats, or Kofy Titki, is likewise a Persian grape; they are greenish, and of an irregular cylindrical form, somewhat resembling a finger. This fruit is scarce, very savoury, and ripens in September.

The eleventh is that of Constantinople, called by the natives Tzaregradskoi, from the place of its origin. It bears a very large oval grape, of a mahogany colour, is almost as big as a plum, and hangs on a brittle stalk. This fruit is tolerably abundant in the vineyards, and is used at table as well as for the wine-press: but, in both respects, it is not of a very superior quality, and ripens late in September, or in the beginning of October.

The latest species of the vine is that called the autumnal, or Offentshak. It bears a round grape, with a thick skin, of a light straw-colour, has a tolerably good flavour, and yields the common white wine. It may be preserved fresh throughout the winter, if hung up by bunches, in a dry place.

The manner of planting these different sorts of the vine, at Astrakhan, is nearly the same as that practised in other countries; partly by shoots, and partly by slips. The soil, however, is very poor, and consists almost entirely of clay combined with sand; hence it requires to be manured before the vine is planted, and, after several experiments, horse-dung has been found to be the most beneficial. The trenches in which they plant the vines are generally filled with a mixture of earth and old manure. Those proprietors who wish to spare the manure, fill only the small pit which is made for the plant, and is about three spans wide and three deep. This economy, however,

however, is productive of no permanent benefit ; for, as soon as the roots of the vine extend, they are but weakly nourished. Nothing is more advantageous, in general, for this plantation, than previously to manure the soil for a few years, and plant it with cabbages or water melons.

The planting of the vine shoots or slips takes place according to the weather and other circumstances, generally in spring, and sometimes even in autumn. The shoots are either first placed thick in trenches, and after standing two years, the necessary supply is transplanted, and thus sufficient room is left for the remainder to spread ; or they are planted, at first, with five or six shoots in each pit of the trenches before mentioned : some old putrified manure is then thrown into the trenches and pits ; this is covered with a thin layer of compost in which the shoots are placed, and at length overspread with mould. There should be four eyes left to each of the weaker plants ; but three are sufficient for those of greater vigour. The plants are set in an oblique direction, so that one end touches the edge of the trench, and only one knot appears with its bud above the surface, which is covered with a light mould, to protect it from the heat of the sun. When they are planted, water is conveyed into the trenches ; and this fertilizing supply is repeated at least ten times during the summer. All weeds are constantly cleared from the trenches ; and thus, on account of the rapid vegetation, the vines bear fruit even in the third year.

The slips are generally cut in autumn, after the vintage ; and for that purpose the most healthy vines from two to three years old are selected. These are placed on both sides of the parent
plant,

plant, in a manured foil, and two or three knots only are left above ground. In the following summer, having taken sufficient root, they are then separated from the vine and transplanted.

In order to re-invigorate the old and exhausted vines, a process is adopted, called Potoplenie, or burying them under ground.

The whole trunk is covered in a manured foil, to convert the sprigs into roots, and only so many as have room to thrive are allowed to grow: when the stocks are not weak, the root alone is usually buried in a foil mixed with old manure.

The other kinds of labour which a vineyard requires, from spring to autumn, are the following:—Digging of the foil, Rafgrebka; tying up the shoots, Podwaska; watering, Poliva; watching the ripe grapes, to preserve them from the birds, Podboika; the vintage, Reska; cutting of the vines, Obreska; and laying them under ground, Sagrebka.

The first work in spring is to dig up the vines, which, on account of the severe winter frosts, must always be buried. It is of great advantage, that this should be done at a proper time, as the fruitfulness of the vines depends very much on this circumstance: for, if they are too soon uncovered, the morning frosts are sometimes detrimental to the first buds: if, on the other hand, they are taken out too late, so that the buds have previously sprouted under the earth, they may be injured either by the spade, or in tying. From long experience it has been ascertained, that the most proper period to perform this operation is the last week in March, if the weather permits. A vine-dresser is able to dig up and dress about fifty vines a-day.

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The next operation is to tie the twigs. For this purpose the strings of untwisted ropes are used, which occasion a considerable expence. The inner rind of the lime-tree is not strong enough to sustain the weight of the grapes, especially when violent gales blow from the sea, in summer.

As soon as these two branches of cultivation have been attended to, the nature of the dry climate and soil of the country renders the watering of the plantation necessary. In my opinion, the roots of the vine, by spreading too near the surface, in consequence of frequent watering, from the time they are first planted, renders the continuance of this artificial aid indispensable. If an attempt were made in autumn, to plant a vineyard on the sandy and moist eminences, along the western bank of the Volga, in a proper situation, and to place the vines so deep that they would grow from the time they were planted, without being watered, I am of opinion, that experience would evince the practicability of cultivating this plant with success, even in the hottest summer.—The wine thus produced would certainly be richer and more spirituous than that obtained from the watery grapes of the present plantations; especially, if the stocks of the vine were cut shorter than they are according to the present method. On the contrary, the watering plan, by promoting the exuberant vegetation of the succulent vines renders it expedient to lop them at a considerable height, and thus occasions a great expence, in wood for the espaliers, in workmen's wages, mills for raising water, and the like. The most advisable method would be to rear the vine in a coppice formed by several shoots, as is practised in Hungary, and thus facilitate the necessary covering in winter.

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Such would be my mode of establishing dry plantations. — At present, there is no vineyard in this neighbourhood without one or more windmills, or machines to raise water, which are worked by oxen or horses, and with which the soil is as it were inundated, at least seven times, from spring to the middle of July; infomuch, that it is nearly converted into a morass. This frequent watering, together with the early vegetation of the vine, which is promoted by having been buried under ground in winter, accelerates the growth and maturity of the grapes, and renders them large and beautiful; but the vine itself is thereby proportionally exhausted. — The method now followed in the vineyards cannot be easily changed; as the plants are set on hillocks which are naturally dry, they will not thrive without those artificial waterings, and consequently take only flight root. Hence, if the usual supply of water were withheld from them, the vines as well as their fruit would suffer by the change.

At the time of watering, the weeds in these vineyards are carefully extirpated with shovels. The weeding is performed twice; first, when the vine is in blossom, and the second time, after the blossoms have faded. The most common weeds are, a wild fallad, the *Lactuca querna*, hemp, the *Sisymbrium Iris*, *Læselii*, *Sophia*, and *altissimum*, *Thlaspi bursa*, which the Armenians use as an early pot-herb; the *Lapidium perfoliatum* and *ruderales*, likewise the *Sinapis rubella*, which is a good early fallad; the *Cynanchum acutum*, *Convolvulus terrestris*, *Lamium multifidum*, *Glechoma*, *Astragalus physodes*, some species of the *Salsolæ*, *Zygophyllum Fabago*, *Harmala*, *Scorzonera runcinata*, *Ranunculus falcatus*, *Hypecoum pendulum*, and *Panicum Crus galli*. The last mentioned plant attaches itself to the clothes with

with its *hamuli*, or little hooks, and is called *Lyubimaya Traba*, or the love-plant.

In the latter end of July, when the grape begins to ripen, a great number of birds infest the vineyards of Astrakhan, such as the common and winter crow, woodpeckers, magpies, and starlings. The voracity of the magpies and numerous flights of starlings is so great, that the proprietors of the vineyards are obliged to employ persons to watch them; who stand upon scaffolds called *Vyshki*, that they may distinctly view the plantations in every direction, and frighten away the birds with rattles, or if that be ineffectual, they pelt them with small balls of clay. In the morning, and at sunset, they are obliged to redouble their vigilance, because the birds are then most eager for the fruit. The little *Motacilla Trochilus* makes its appearance among these birds, and is very expert at emptying the grapes with its beak.

At this period it is customary to strip the vines of their superfluous foliage, with a view to promote the ripening of the grapes: and thus the vintage gradually approaches. About the middle of September the vintagers begin to press the wine, and progressively continue their labours with the different sorts of grapes, as they ripen. Some proprietors begin still earlier, but to delay the vintage to a later period would be impracticable here, on account of the watery quality of the grapes, in consequence of which they cannot remain long on the vines, without beginning to drop and decay.

The pressing of the wine is performed by putting the grapes into bags, and treading upon them in butts or tubs. The husks, or *Gushtsha*, are pressed a second time by some vintagers, but

others leave the remaining juice in them, in order to obtain more brandy.

After the vintage, the vines must be lopped before winter; an operation that requires great experience and judgment. The old woody twigs, which no longer promise any fruitful shoots, are entirely lopped away, and such a number only is left of the biennial shoots, as the stock is capable of nourishing. The annual fruit-bearing vines, are likewise lopped to the third knot, because it has been found by experienced vine-dressers, that the plants thus cut are for a longer space of time productive of fruit. The slips which are cut for future planting, are tied together, and buried during winter.

The parent vines themselves are buried under the earth during that season, as the soil is in general but thinly covered with snow, and the frost in some years rises to 23 degrees of Reaumur's thermometer. Each vine is first disengaged from its supporting frame-work; its branches are tied together; and it is then placed in a trench, covered with hay, and afterwards with a thick layer of mould, to preserve it from frost. — All these labours are performed in most of the vineyards by hired workmen. — The watchmen and two other labourers who are appointed to manage the watering machines, receive from thirty to forty rubles a year, and the rest are paid at the rate of five rubles a month.

Notwithstanding these expences, the vineyards of this country are tolerably profitable. The most considerable cultivators next to M. de Beketof, are Ivan Avramof, the heirs of Popof, who have purchased the best vineyards that formerly belonged to the Crown, Jacob Federof, and Vassili Kaftarasof. The price of
fresh

fresh grapes sent to the markets of Mosco and St. Petersburg, together with the wines, brandy, and vinegar, amply repay the disbursements. White wine is the principal produce of these vineyards. Among the red wines, there is one kind similar to the common *Lachryma Christi*, made by Jacob Ostsharkin, who probably avails himself of some artificial process. Popof, the merchant, prepares a species of effervescent wine, somewhat similar to Champagne, and very agreeable to the palate. For this purpose, he takes the sweet must of the Kyshmish, when it is somewhat fermented, and places it in small casks in an ice-cellar, and when it is clarified, he draws it off into strong bottles. The common white wine is not unlike Vin de Grave, and with a small addition of brandy, it keeps sound for several years. The wines brought hither from the banks of the Terek, especially the red kind, are much stronger; but they doubtless contain a portion of brandy, as is discoverable by their flavour. In that country, the vine is generally cultivated in a manner similar to that practised here; but the plants are not so well managed: the common sorts readily turn acid, and are drunk only by tiplers, under the name of Tshishir. The culture of the vine might be greatly encouraged in Astrakhan, as well as on the banks of the Terek, the Don, and particularly in Taurida, if the importation of Moldavian wines were subject to a heavy duty, or wholly prohibited. A still higher duty should be laid on the wines of the Archipelago, which are so prejudicial to health, and being cheaper, injure the sale of those produced in this country.

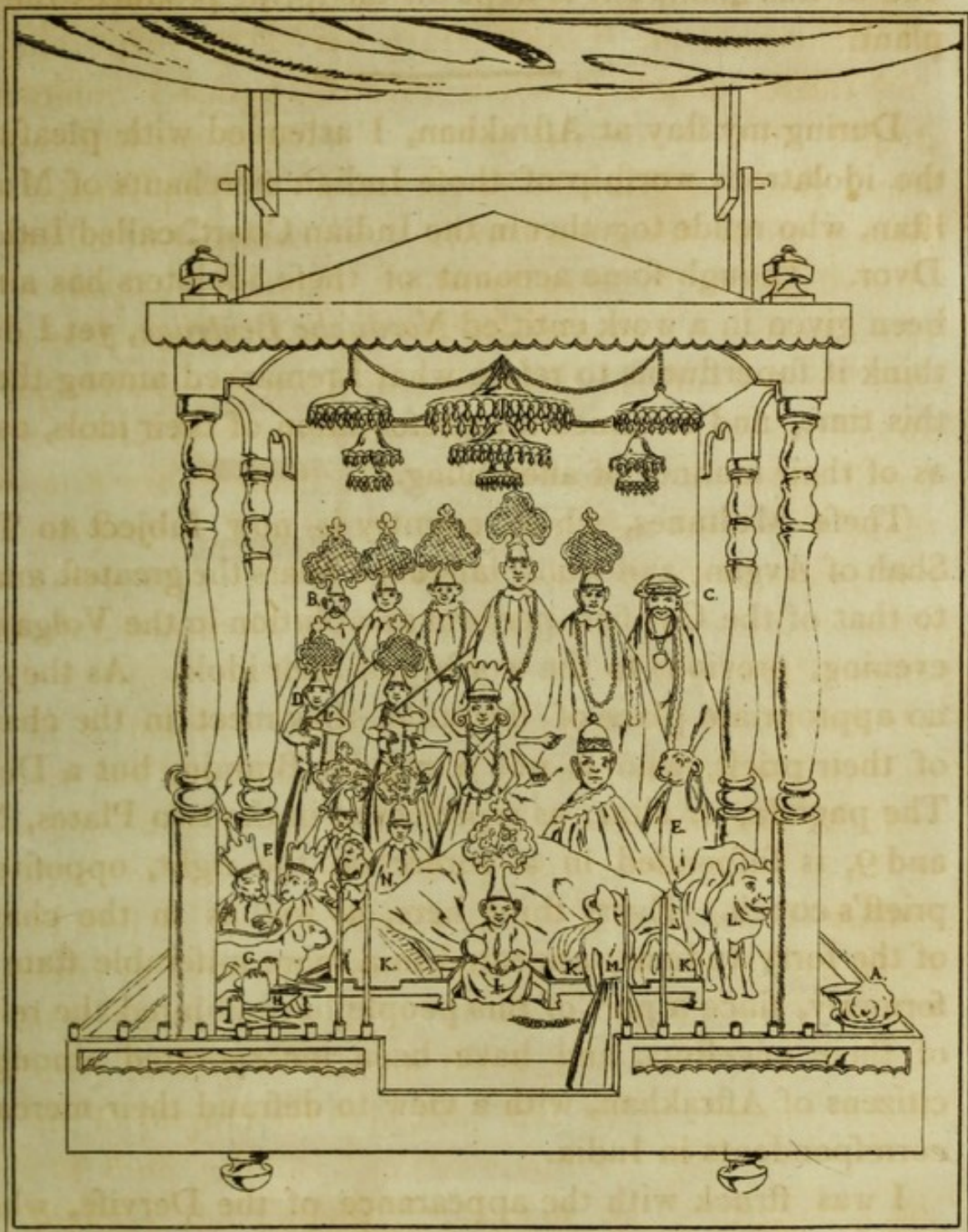
To preserve the grapes, throughout the winter, they are either suspended, covered with millet and wood ashes, placed

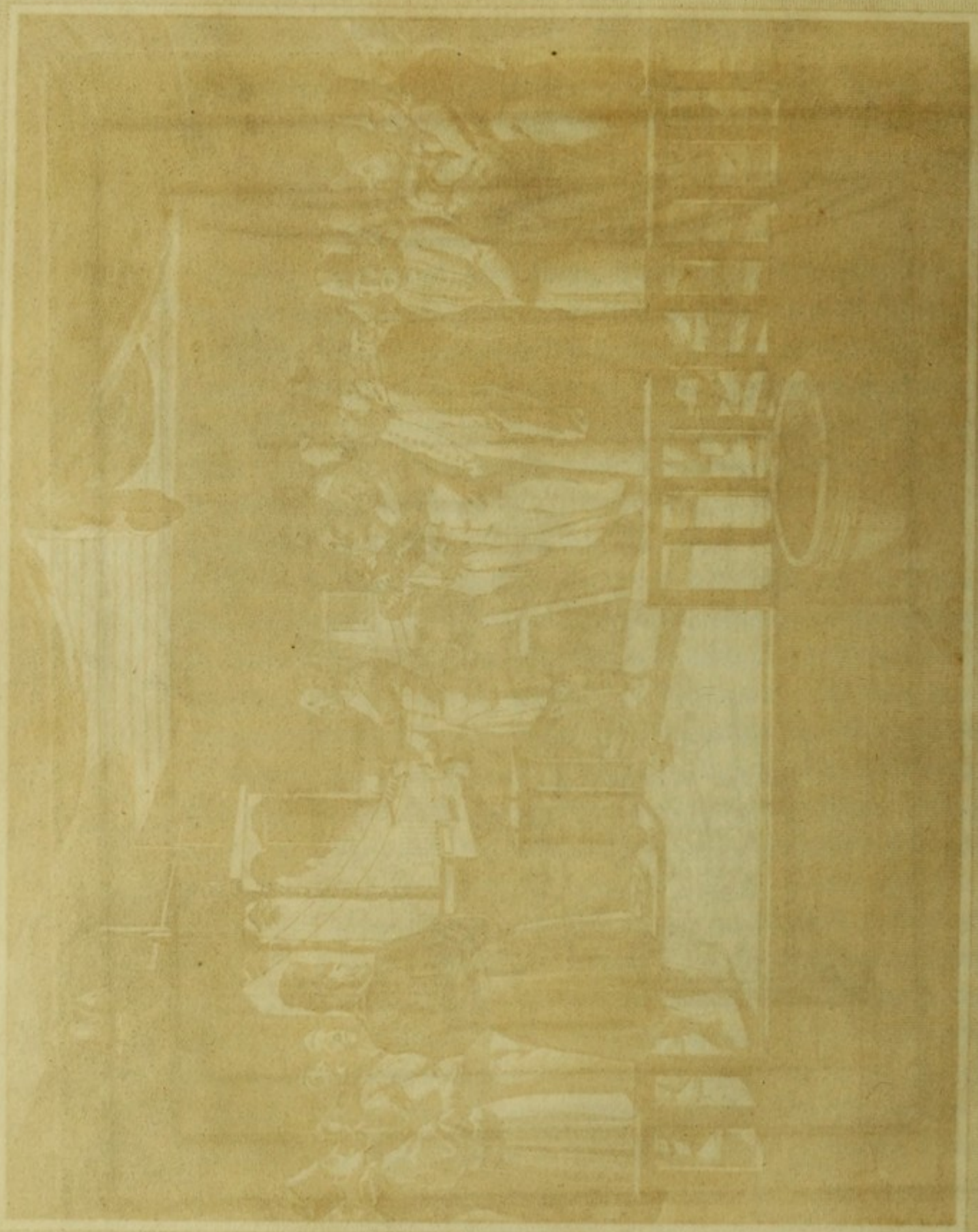
in honey and brandy, or preserved in salt. The last-mentioned method is also adopted with asparagus, which is very abundant, and in this manner it is kept till the spring produces the fresh plant.

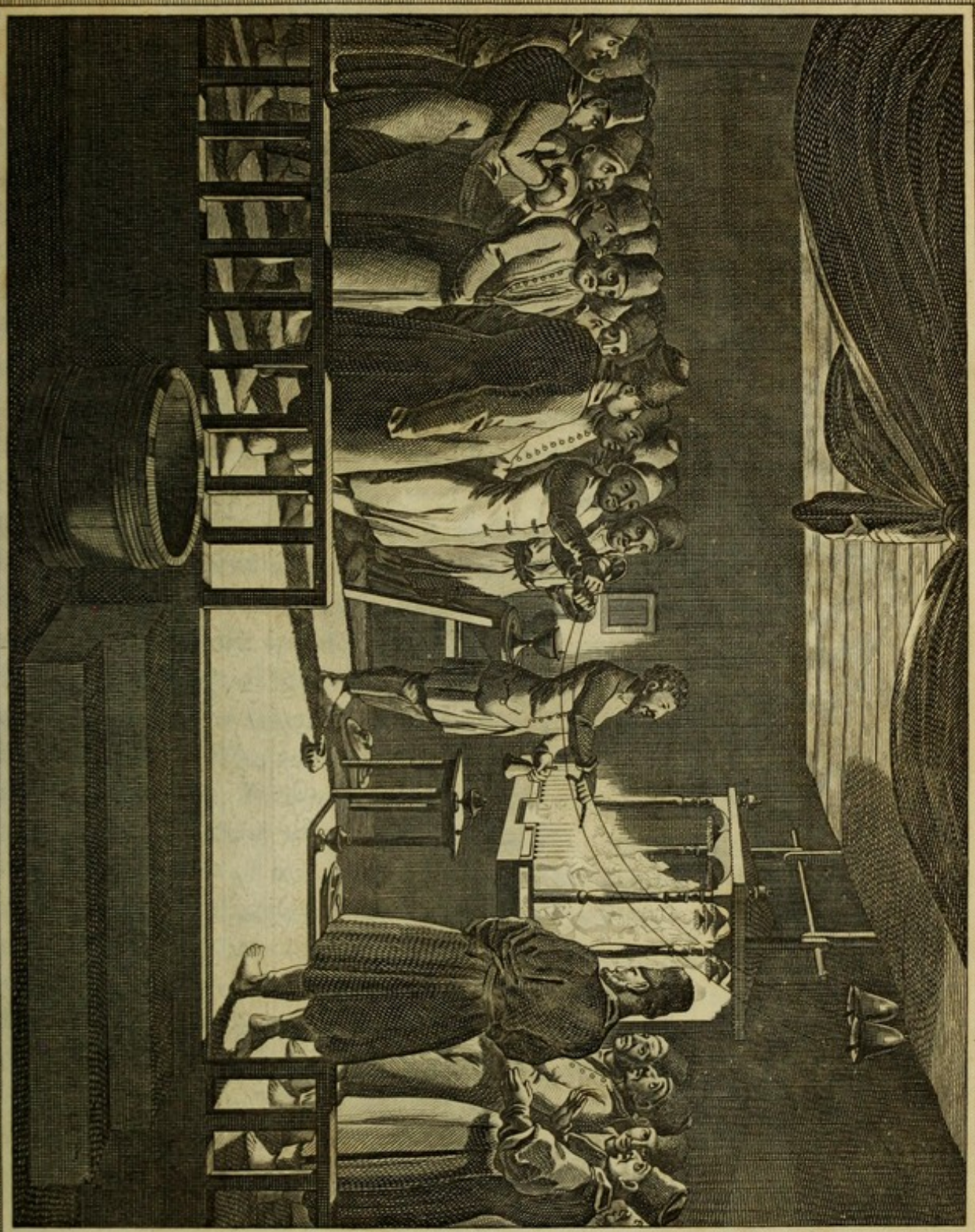
During my stay at Astrakhan, I attended with pleasure at the idolatrous worship of those Indian merchants of Multanistan, who reside together in the Indian Court, called Indeiskoi Dvor. Though some account of these idolaters has already been given in a work entitled *Nordische Beyträge*, yet I do not think it superfluous to relate what I remarked among them at this time, and to annex a representation of their idols, as well as of their manner of assembling.

These Multanes, whose country is now subject to Timur Shah of Avgan, and whose language bears the greatest analogy to that of the Gypsies, perform an ablution in the Volga every evening, previous to the worship of their idols. As they have no appropriate place of devotion, they meet in the chamber of their priest, who is not a regular Bramin, but a Dervise. The pagoda, or altar, as represented in the two Plates, No. 8 and 9, is suspended in a corner on the right, opposite the priest's couch. Every thing here, as well as in the chamber of the forty Indians, appeared in a more miserable state than formerly, since a part of this people have abjured the religion of their ancestors, and have been incorporated among the citizens of Astrakhan, with a view to defraud their mercantile correspondents in India.

I was struck with the appearance of the Dervise, whom I had formerly seen clothed in a robe and girdle perfectly white,
which







which dress appears to be an exclusive privilege of the Bramins. But he now performed the religious ceremonies in a cloth vest buttoned up, and long white breeches partly covered with a redish garb. His head was not shorn like the other Indians, but he wore short hair, and had a round spot, stained with vermillion, above his nose. The other Indians, on the contrary, were shaved, except a tuft of hair on the crown of the head. They generally, after bathing, describe some Indian character with turmeric on the forehead.

We were requested to pull off our shoes, or clean them, as the others did, before we ascended the elevated part of the chamber, which was appropriated to devotion. The Dervise began the service with silent prayers and meditations. Some of the Indians then placed melons and other fruits on the floor, beside the pagoda. The Dervise placed himself before the shrine of the idols, which was illuminated by a row of candles in front. To the left of the priest, on a small table, Plate 9, there was a large double lamp filled with tallow, and kept burning night and day. The mirror suspended on the wall above the table was inverted. To the right, on the floor, there was a metal basin, with a salver which half covered it, and on the left were two cymbals of the Janissaries, and two smaller musical cups, similar to those used by the Kalmuk priests. A small table was placed before the Dervise, under the suspended pagoda, with a little censer, and a particular lamp with five wicks. The idolatrous worship commenced in a loud voice; an Indian pulled the string of the bells which hung at the side of the shrine, and two others took small cymbals in their hands. They all sung an harmonious litany, in unison to the tinkling of the bells

bells and cymbals. This hymn was begun by the Dervise himself, with a sacerdotal bell in his left hand, like that used by the Lama. In the first division of the hymn, addressed to the idols, the Dervise took the censer, and throwing some gum copal into it, he offered the incense before the shrine, upwards, downwards, and in a circular direction; a ceremony intended to represent the element of air. After having performed this part of the service, he took a square folded piece of cloth, which lay before the idols, and moved it in various oscillations before them, as symbolical of the element of the earth. He next successively lighted the five wicks of the lamp, represented in the Plate, and during continued hymns moved it in different directions before the idols, as emblematical of the element of fire. Having finished this rite, he placed the lamp on a small salver, and it was then carried by a member of the congregation to all the worshippers present: each of whom, after having reverently held his hand over the five flames, touched his eyes with his warmed fingers. This part of the ceremony being concluded, the priest received the lamp, and extinguished the five flames with its pedestal: but the wick with which he had lighted them, he threw into the large lamp.

At length, the element of water was worshipped. For this purpose, pure water was kept ready in a large marine shell, Plates 8 and 9, which was placed on a brass vase supported by the right corner of the pagoda. The Dervise took this shell, and, between the pauses of the song, he poured the water it contained with much dexterity from a considerable height into the half-covered cup on the floor; and lastly, dipping his hand into this holy water, he besprinkled the whole congregation, who

who received this benediction very devoutly, and with folded hands.

After the litany was finished, the Dervise gave the cup with holy water to the person who chimed the bells, and sat down, together with the whole congregation, cross-legged on the carpet: he then caused a spoonful of holy water to be poured into the palm of each person's hand, who religiously swallowed it, and moistened his head and eyes with his wet palm. The Dervise afterwards took the remainder, with which he washed his head and eyes, and poured it into the vase that supported the shell before the idols. He then said a long prayer for the Empress, the constituted authorities, and the people. After this ceremony, the Indians were presented with dried raisins without stones, or Kyshmish, on a plate; and after they had all risen, plates with sugar-candy and pistachio nuts were offered to the strangers. When the whole ceremony was concluded, we were permitted to approach and make drawings of the pagoda, without touching any part of it. At our request, the priest himself uncovered part of the idols, which were dressed in sky-blue and pale rose-coloured silk cloaks, describing them to us by their names. In the back-ground, elevated on a pedestal, in a direction from right to left, we observed the following: Sagenat, Tsettergun, Letseman, Rama, Bahart, and Lekumi, as they are represented in the eighth Plate, from B to C. The first five were adorned with high moveable bonnets. The last was a representation of a female, dressed in a kind of turban, with a ring in her nose. — On a lower step, in the second row, on the right side, from D to E, were Murli and Mrohor; they were decorated with high bonnets, but without silk garments,

and held staves in their right hand, over their shoulders. In the midst, there was a figure called Ashtabudshi, with eight arms, and crowned like Cybele; the next was a figure called Saddasho, in a sitting posture, with a round bonnet, and Honuman, an idol resembling Apis, with a dog's head, and rings in his ears. Small idols and relics crowded together, occupied the front part of the shrine. Before the figures that held staves in their hands, we observed two distinguished pictures of Vishnu and Brama, or as they pronounce it, Brmahah, N. Farther to the right, there were two very prominent sitting idols, in the form of apes, which were likewise called Honuman, with long-pointed caps, like crowns. In front of these was the figure of a tiger, or lioness, cast in copper, like the idols, and called Sfurr-nur-feng. Lastly, towards the corner, we noticed three figures similar to the Duruma of the Mongolian Lamas, which appeared to represent Lingams, and were called Shadisham, H; that in the middle leaned on a square pedestal of yellow amber, in the form of an obtuse cone, studded with grains of rice: two other small columns rested on a base similar to a lamp, which represented the female parts of generation. In the middle was placed a small idol, I, with a very high bonnet, called Gupaledshi: at its right side there was a large black stone, and on the left, two smaller ones of the same colour, K K K, brought from the Ganges, and regarded by the Indians as sacred. These fossils were of the species called Shofs, Saugh, or Sankara, and appeared to be an impression either of a bivalve muscle, with long protuberances, or of a particular species of sea-hog. I have never seen among petrifications these stones with a figured elevation, by which

the Indians endeavour to represent certain female parts, and raise the colour by yellow streaks of turmeric. Such stones are held in the greatest veneration among them. Behind the foremost idol, there was a folded silk garment lying across. In the corner stood the figure of a saddled lion, L, called Nhan-digana. There was besides an image at the edge of the shrine, with its face turned towards the other idols. He appeared almost withered, had large ears, and was called Gori. The front space likewise contained the bell, or Ghenta, of the idolatrous priest, as well as his rosary, and a sceptre, such as is peculiar to the Lama clergy. From these details, the great analogy between the idolatrous worship of the Lama of Tybet, and some ceremonies of the Indians, and even of the ancient Christian Church, will be evident.

On the 19th of August, I assisted at a very remarkable ceremony, which took place after the ordinary celebration of divine service, in the metropolitan church of the Armenians. The Suffragan, or Archimandrite, carried in a solemn manner the holy oil, or Myron, which is only prepared every four or five years in the Araratian convent of Etsh Miadfin, and is afterwards distributed to all the churches of the Armenio-Nestorians. This oil was brought in large copper flasks, and slowly poured by the Suffragan, with much attention, and many pauses, into glass bottles, in order to exhibit it to the people. The ceremony lasted full two hours and a half, during which were said a long litany and prayers for all ranks of people: the whole concluded with the Lord's Supper, and a

general benediction, which was given by the Archimandrite alone. I obtained permission to examine the oil; it had acquired a green colour from the copper vessel, and a rancid smell. It tasted like oil of olives, partaking of the odour of mastich. I was told that it was prepared in forty days, from flowers and plants of forty different sorts, which were collected with great secrecy on the mountains of Anatolia, and the Caucasus.

On the 20th of August M. Akhmatof, Captain of the Port of Astrakhan, granted me a barge, in order to send a party to the mouth of the Volga; a distance from sixty to eighty versts, where, according to the information I had obtained from the late Dr. LERCH, the *Nymphaea Nelumbo* grew in abundance, so that I procured a great number of flowers and fruits of this plant, in different gradations of growth; some of which had nearly attained perfect maturity. The fruits, which the Russians call sea-nuts, or Morfkye Orekhi, the inhabitants of Tybet, Badma, the Persians, Dariopacta, and the Indians, Pabin, or Lilifar, are searched for, and eaten with avidity, by the last-mentioned nation, who regard them as sacred. According to their mythology, and that of Tybet, the perfect divinities are regenerated in the richly scented flowers of this plant, which serve them for a throne. Indeed these flowers have an agreeable flavour, and the distilled water which the apothecary of this city, the Assessor ZETTLER, had the politeness to prepare for me, contains an agreeable and permanent taste of fine Ambra, and, when used as a lotion, imparts such a softness

softness and delicacy to the skin of the face and hands, that it deserves to be introduced as an innocent cosmetic into all the apothecaries' shops, especially as the flowers may be collected throughout the summer, in the inlets of the Volga and the Bolda. — I found the leaves of this plant completely free from Zoophytes, and other aquatic insects. The feminal vessels are more conspicuous, and the germ more magnified in the seed of the *Nymphæa Nelumbo*, than in any other plant. When the nuts are inclosed in a lump of clay, and immerfed under water, they readily germinate, particularly if a flight incision has been previously made in the shell.

During my stay at Astrakhan, which I twice visited, I obtained information from intelligent persons, respecting the events and changes that had occurred in Persia since the death of Kerim Khan. As great commotions had for some time prevailed in that country, I was anxious to procure a detail of those transactions, especially as Murtafa-Kuli-Khan, a brother of the last Persian conqueror, Aga-Mamet-Khan, had, in the spring of the present year, 1793, accepted the protection of Russia, and a pension. The reader will perhaps be gratified with a particular narrative of these affairs, which may serve as a sequel to the more ancient historical account published by the younger GMELIN, in his Travels through Russia.

Kerim-Khan-Seit, who had the good fortune to govern Persia during a long interval, under the title of Vakil, that is, Governor

Governor or Regent, died on the 11th of February 1779, in the eighty-third year of his age, after having ruled over the Persian Empire upwards of sixteen years. He left two brothers, Saki-Khan, and Saduk-Khan; three sons, Abdul-Fettaa-Khan, Fett-Ali-Khan, and Mamet-Ali-Khan, and an only daughter. His sons, together with Saki-Khan, were at that period in Shiras, the ordinary residence of Kerim-Khan; and Saduk-Khan was at Baffora, which had been recently conquered by the Turks.

The death of Kerim-Khan was an event so important to all Persia, that a report of it alone, when propagated, had formerly occasioned the defection of whole provinces. To prevent commotions, and prove to the people that he was still alive, in the latter days of his extreme debility, when he could no longer walk from the Harem, he ordered himself to be carried to the Divan. At length, when he expired, his death, from political motives, was kept secret, till proper measures were taken for the preservation of tranquillity. The gates of the city were shut, and the hostages from the provinces placed under a strict guard, so that his decease was not made known for ten days. Meanwhile his remains were privately interred in the Shah-Babi, or garden of the Shah, as he had expressly directed.

Although Saki-Khan immediately caused the young Abdul-Fettaa-Khan to be proclaimed supreme Governor, yet this Prince being young and weak, his uncle retained all the power in his own hands; ordered the other sons of Kerim-Khan to be imprisoned; and put to death several persons of rank, together with some trusty partizans of the late Regent. His sanguinary temper, and the cruelty of his behaviour, during the Regency of his brother, were universally known. And as all the Khans
of

of the provinces clearly perceived, that he intended to make himself absolute ruler, under the sanction of his nephew's name, they unanimously, even Saduk-Khan not excepted, who remained as Governor at Bassora, made all possible preparations to renounce their fealty.

The first revolt began in the neighbourhood of Ispahan, about five months after the death of Kerim-Khan. Saki-Khan, who marched at the head of a numerous army from Shiras, indeed brought with him his nephew, Abdul-Fettaa-Khan, but in chains. He left the other sons of Kerim-Khan at Shiras, under the eye of his son Abkar-Khan. The first attempt he made with his army, was against the small town of Pokhimkala, which had revolted with several others. This town is three days' journey from Ispahan. He captured it, and put all the inhabitants to the sword, not sparing even the innocent children. This, and other cruelties, spread terror and indignation throughout his army; nay, the animosity of the inferior officers became so great, that, together with Alibek-Sand, they conspired to assassinate their commander. The conspirators disclosed their plan to the injured Abdul-Fettaa-Khan, who would not act in concert with them, but left the whole enterprize to the projectors. They nevertheless persisted in their determination, and, during the night, overpowered and killed Saki-Khan at his head quarters. Thus the chains were removed from Abdul-Fettaa-Khan, who next morning, with martial music, was proclaimed the lawful Sovereign of Persia*.

* After the abolition of the title of *Shah*, it was customary in all the provinces of Persia to publish, by a speaking trumpet, as follows: — “*In this town or province at present reigns such or such a Khan!*” During the reign of Kerim-Khan, the proclamation was made in the following words: — “*This town is now governed by Kerim-Khan-Vakil, or by such or such a Khan.*”

Abdul-Fettaa-Khan, being thus established on the throne of his father, quelled the insurrections around Ispahan, and returned to Shiras. Thither he immediately invited his uncle, Saduk-Khan, who, without delay, transferred his government to another person, and hastened to the Court. Saduk-Khan at first evinced no inclination to assume power, and only endeavoured to assist his nephew with his counsel on state affairs. But Abdul-Fettaa, instead of consolidating his Empire, and reducing the revolted Khans of the provinces to their duty, shut himself up in his Harem, increased the number of his concubines, indulged himself in every species of voluptuousness, and thus forfeited the attachment of all his subjects. When Saduk-Khan observed that his counsels were unavailing, he resolved, towards the end of the year 1779, in concert with the principal counsellors of the Empire, to imprison the imbecile Abdul-Fettaa-Khan in his Harem, and assume the reins of Government. It is asserted that, on this occasion, the mother of the Sovereign barricaded herself in a quarter of the Harem, and, with her guards, resisted to the last extremity, exhorting the people from the top of the walls, to assist the lawful heir to the throne, till she was compelled to submit to the usurper.

Saduk-Khan had scarcely ascended the throne of Persia, when he found a rival in the person of his son-in-law, Ali-Murat-Khan. He was a young man of the greatest expectations, and had been made Serdar, or General, under Kerim-Khan, who had a great affection for him, and sent him at the head of an army against Kirmanshah, in the neighbourhood of Hamadan, where he was stationed, when the abovementioned political changes took place at Shiras. Turning this circumstance to his own advantage, he endeavoured to attach the army to his interest,

terest, and to render himself formidable by rebuilding several forts in the vicinity of Hamadan, in order to stand a siege, if necessary. All the artifice of Saki-Khan could not induce him to visit Shiras; and he became mistrustful of his father-in-law, Saduk-Khan, who also invited him to that city. Ali-Murat-Khan reinforced his army with a corps of about one thousand Turks, whom he had collected in the environs of the frontier town of Kerkud, and marched, in the year 1780, against Ispahan. Meanwhile, according to some accounts, Saki-Khan lost his life in the town of Yefdhaft, in the expedition against Ali-Murat-Khan. All the towns through which he marched surrendered to the latter, without opposition, and furnished him with considerable reinforcements, which induced him to undertake the bold enterprize of proceeding against Ispahan.

He conquered that city without difficulty, especially as his Turks had, by their superior bravery, intimidated the Persians.

At the conquest of Ispahan, numerous depredations were committed by the victorious army. The Armenian churches were plundered, and the Bishop of that See received the bastinado on the soles of his feet, in order to compel him to discover the ecclesiastical treasures.

During these transactions, Sylfigar-Khan, of the province of Hamfa, revolted. The cities of Sengan and Soltania are situated in this province. He had been appointed Governor of Hamfa by Kerim-Khan, and was with the army before Bafora, when the latter died. In consequence of that event, Sylfigar-Khan left the army secretly, and increased the number of his adherents in his own province. Having first made prisoner Hidaet-Khan, of Gilan, he conquered Kasbin, and was

encouraged by this success to march against Ispahan. Ali-Murat-Khan, who was at this time in possession of the city, took the field against him, defeated, and compelled him to seek an asylum in the borough of Akbulak. Here he was made prisoner by Ali-Khan, and delivered up to Ali-Murat-Khan. The victorious Ali-Khan now brought Hidaet-Khan, together with Sylfigar-Khan, before the sovereign*, and solicited the punishment of Sylfigar-Khan, while he offered to pay Ali-Murat Khan a tribute of 50,000 rupees, and 2000 batman† of silk, on being re-established in his possessions. The sovereign being induced by these promises, as well as by the imperious conduct of Sylfigar-Khan, commanded him to be instantly put to death, and intrusted Ali-Khan with the government of his province. Hidaet-Khan was afterwards re-conducted under an escort of 5000 men, to Gilan, where he was appointed Khan. It is said, however, that in consequence of the subsequent changes and disturbances, he did not fulfil his promise.

All the Khans of the country of Aderbidshan, and those of Khoi, Tauris, Maragai, Rumi, and Shagagi, submitted to the victorious arms of Ali-Murat-Khan, and gave him hostages, so that he returned to Ispahan, sovereign of all the N. W. region of Persia. Meantime, Saduk-Khan, who was chagrined at the success of his son-in-law, sent an army of 8000 men, under the command of his eldest son, Alina-Khan, to Yezd; a town in

* Hidaet-Khan, who had long governed in Gilan, was a Prince of a very humane disposition, and in amity with Russia. He was expelled from his government, immediately after the death of Kerim-Khan, by the treachery of Nasarali-Khan of Ardebil, who had acted in a subordinate capacity. Hidaet-Khan hoped to find a protector in Sylfigar-Khan; but the latter confined him in chains.

† The Batman is a weight of fifteen pounds.

the vicinity of Ispahan, to defend that place against Ali-Murat-Khan, and to prevent him from taking possession of it. The latter being informed of this transaction, dispatched a body of troops to Yezd, but they were defeated on the first attack, and so rapidly pursued by Alina-Khan, that his competitor was obliged to fly from Ispahan to Hamadan. However, he soon rallied his troops, and compelled Alina-Khan to make a precipitate retreat from Ispahan.

After this event, Ali-Murat every day became more successful. He subdued all the towns in the vicinity of Ispahan, and rendered himself formidable not only to the petty sovereigns of the provinces, but also to the heirs of Kerim-Khan. At length, towards the end of the year 1780, he made preparations to besiege Shiras, the residence of the late Vakil. But as this place was strongly fortified, provided with a powerful train of artillery, and defended by a chosen garrison, all attempts to take it by storm were ineffectual, and Ali-Murat was obliged to change the siege into a close blockade. The garrison of Shiras sustained this blockade during a whole year with the greatest fortitude, and though they were necessitated to subsist on the flesh of horses, asses, and even dogs, yet they voluntarily suffered this distress, rather than submit to a conqueror whose cruelty they had so much reason to dread. Ali-Murat-Khan at length succeeded by means of a secret correspondence with a certain Vali-Amet-Khan, a descendant of the Shahs, who was retained as an hostage by the successors of Kerim-Khan. This traitor, in concert with some others, opened a gate to the besiegers during the night, and thus delivered up the city, in the beginning of March, 1782. All the inhabitants of that place who had sur-

vived the famine, now fell by the sword. Saduk-Khan, however, shut himself up in the citadel, with his twenty-three sons, those of Kerim-Khan, and some trusty guards, still refusing to surrender. Being at length obliged to yield, he paid with his life for this obstinate resistance. The sons of Kerim-Khan were deprived of their eyes, and condemned to imprisonment. The city of Shiras was plundered and desolated, insomuch that not a vestige of its primitive grandeur remained, and all the treasures of Kerim-Khan fell into the hands of the conqueror.

Ali-Murat-Khan dispatched couriers with the news of this victory, to all the towns subjected to him by conquest; and remained for some time at Shiras. During these transactions, he sent detachments from his army, against Kasbin, to take possession of Yezd, and also against Tekheran, or Teiran. In May 1782, the latter detachment approached the frontiers of Masannderan; the residence of Aga-Mamet-Khan, the only governor who still refused to submit to Ali-Murat.

At length, Ali-Murat-Khan returned to Ispahan, which he made his place of residence. All Persia, except Masannderan and Astrabat, acknowledged his sovereignty; and though his most ardent desire was to subdue this province, that he might be crowned Shah, his characteristic prudence and clemency induced him to give repose to a country, which had been so long devastated by war. He therefore appointed as prime minister Mirza-Rabi, a wise man who governed the Empire like a father. Travellers who visited Persia during his administration, praised the good police and wise regulations in that country, as well as the safety with which strangers and Christians travelled, and the indulgence which even the lawless hordes of some provinces

evinced to the caravans. The very name of Ali-Murat-Khan was sufficient to maintain order and tranquillity. I have been assured by M. AGATHI, the Director of the Academy, who resided at Ispahan for six months, at the period abovementioned, that though 40,000 soldiers were then collected in that city, they committed no excesses whatever.

In the interior provinces of Persia, husbandmen, mechanics, merchants, and other persons carrying on trade in towns, were usually exempted from military service. There are particular tribes who lead a wandering life; each commanded by their respective Khan. All the males of these tribes are born soldiers. The most distinguished is that of the Seites, from whom Kerim-Khan and Ali-Murat were descended; the next are those of Lek, Shah Sefi, Shagagi, Bakhtiyar, Gadshar, and others of less note, which we shall pass over. All these tribes were devoted to Ali-Murat-Khan, except that of Gadshar, which was subject to Aga-Mamet-Khan of Masanderan, and of which he was a descendant.

As Ali-Murat-Khan had taken an active part in the conquest of Bassora, the Ottoman Porte was apprehensive that his sentiments, like those of his predecessor Kerim-Khan, were inimical to the Turks. To prevent any pretext on the part of the Porte, for exciting disturbances in Persia, by political intrigue, Ali-Murat-Khan was extremely solicitous to remove this suspicion. And in order to convince the Porte of his pacific disposition, he not only terminated all disputes relative to the frontiers, but he even restored Bassora, and sent a considerable sum of money to Bagdad, to erect new houses of worship, and repair the old mosques in this sepulchral sanctuary of the revered Persian Saints.

After

After a peaceable reign of five years, Ali-Murat resolved, in 1784, to make war against the Khan of Masannderan and Astrabat, who refused to submit voluntarily to his dominion.

Aga-Mamet-Khan being the person who, after the death of Ali-Murat, became so conspicuous in Persia, I am induced to give some account of his family, as well as of his exploits. He was the eldest of eight sons of Mahomet-Hassan-Khan, whose ancestors had been invested with that title. Mahomet-Hassan, however, was only a Bek or inferior nobleman, in the time of Nadir Shah, and was the instigator of many commotions at Astrabat, the place of his residence and education. During the insurrections which took place after the decease of Nadir Shah, he subjugated Masannderan, and other adjacent countries; and assumed the title of Khan, as well as the higher rank of Serdar; a dignity conferred only on the most powerful Khans. With this honourable title he reigned twelve years, till, in 1762, he was deprived of his possessions and life, by Kerim-Khan, with whom he had been at war for many years. This catastrophe was accelerated by the treachery of his own people, or he might long have maintained the contest. Kerim-Khan took five of his sons as hostages, namely, Aga-Mamet-Khan, Rifa-Kuli-Khan, Dshaffar-Kuli-Khan, Ali-Kuli-Khan, and Mekhti-Kuli-Khan, who were compelled to remain near the conqueror at Shiras. Aga-Mamet-Khan was deprived of his manhood by order of Kerim-Khan, who conferred the government of the province of Astrabat on three of the brothers, after they had become adults. These brothers were, Murtafa-Kuli-Khan (who afterwards saved himself by flight to Astrakhan), Hussein-Kuli-Khan, and Mustapha-Khan. Here they

they at first lived in great indigence, till with the aid of the neighbouring Turcomans they conquered all Mafannderan, and the city of Astrabat, which had thrown off its allegiance. And as Houssein-Kuli-Khan was killed by the Trukhmenes, Murtafa-Kuli-Khan alone reigned over these provinces, till the death of Kerim-Khan. Aga-Mamet-Khan being informed of the approaching dissolution of that Prince, escaped from Shiras, with two of his brothers, Ali, and Mekhti-Kuli-Khan. Near the town of Kom, in a small place called Souk-Bulak, or the cold spring, by persuasions and promises he collected about five hundred men, with whom he immediately marched against Mafannderan. On his march he met with an escort dispatched from Astrabat to the successor of Kerim-Khan, with a tribute of twenty thousand rupees, which he seized, and then proceeded without any obstacle. When the news of his approach reached Murtafa-Kuli-Khan, he sent an army of several thousand men under the command of his younger brother, Mustapha-Khan, to prevent the enemy from entering Mafannderan; but these troops went over to Aga-Mamet-Khan, and their commander fell into his hands. Murtafa-Kuli-Khan was now obliged to fly to Astrabat, and committed the government of the whole province of Mafannderan to his elder brother.

His other brothers, Rifa-Kuli-Khan, and Dshaffar-Kuli-Khan, having consequently fled from Shiras, assembled an army, and harassed the frontiers of Mafannderan and Astrabat. At length Rifa-Khan surprized his brother Aga-Mamet-Khan, confined him in chains, and made himself master of Mafannderan. But no sooner was Murtafa-Kuli-Khan informed of this event, than he hastily collected an army, and appeared before Sari, the principal town of Mafannderan. And as Rifa-Kuli-

Kuli-Khan could not rely on the fidelity of his new subjects, he was compelled by menaces to resign the government again to Aga-Mamet-Khan, who threw him into prison.

Immediately on Aga-Mamet-Khan finding himself firmly reinstated in his possessions, he endeavoured by specious promises, and all the arts of dissimulation, to allure his brother and deliverer, Murtafa-Kuli-Khan, from Astrabat; who was scarcely in the power of this perfidious wretch, when he ordered the mother, spouse, and children of his visitor to be imprisoned as hostages, and made himself master of the province. His second brother, Dshaffar-Kuli-Khan, shared a similar fate. These brothers, however, were no otherwise ill-treated than by being compelled to live under his government, in a state of vassalage.

The arms of Aga-Mamet-Khan were very successful in the summer of 1781, during which, with the aid of troops from Turcomania, which he had subsidized, he conquered almost the whole province of Gilan, the town of Kasbin, and several other places. As these conquests, however, had been facilitated by subtlety and promises which he never kept, he lost them almost as rapidly as he had obtained them; and in autumn he was so completely defeated by Ali-Khan of Hamfa, that he was obliged to retreat in the middle of September to his residence, the city of Sari, where he found himself in a critical situation. The sovereign of Persia, Ali-Murat, had not then seriously made a resolution of reducing him to obedience.

In the year 1784, however, having assembled an army of 70,000 men near Ispahan, Ali-Murat proceeded against Masanderan, and encamped near Tekheran, almost at the foot
of

of the Masannderanian mountains. Thence he dispatched a part of the army, under the command of his son Sheikh-Veiffy-Khan, to penetrate into Masannderan, and another division of troops, commanded by his brother Dshaffar-Kuli-Khan, in the rear, to support the operations of the former. Ali-Murat being an enemy to blood-shed, endeavoured to gain over Murtafa-Kuli-Khan's brother, Aga-Mamet, by whose treachery Sheikh-Veiffy-Khan had made himself master of the most important places of Masannderan, and compelled Aga-Mamet-Khan to make a precipitate retreat to Astrabat.

During these transactions Ali-Murat, while in the vicinity of Tekheran, was seized with a fever, which soon degenerating into a dropsy, on account of his intemperance in drinking and other excesses, rendered him incapable of warlike operations, by a daily decrease of his energy and vigour. His faithful minister Mirsa-Rabi, and seventeen of his most beloved concubines, who had followed him in his campaigns, now became apprehensive that, if he died on the frontiers of an enemy's country, part of the army would desert and join that of Aga-Mamet. In order, therefore, to secure the government and treasures for the lawful successor, they hastily decamped, and returned with the army to Ispahan. Ali-Murat died during the retreat, but his death was carefully concealed. Meantime Bager-Khan, Governor of Ispahan, had revolted, was declared Generalissimo of the remaining military forces, whom he had seduced from their allegiance, and made Sheikh-Veiffy-Khan prisoner. Dshaffar-Khan, the brother of Ali-Murat, immediately hastened forward with his army, and Bager-Khan, who had solicited assistance from Aga-Mamet, was defeated, taken

prisoner, and put to death, before any succours could arrive. Dshaffar-Khan also caused his nephew to be deprived of his eyes that he might be the sole Governor of the Empire.

During this struggle for power, Aga-Mamet-Khan again collected an army, made a conquest of Tekheran and Kasbin, and reinforced his troops with those of Ali-Khan, of Sangen. With this army he proceeded to Ispahan. Dshaffar-Khan, being unprepared to oppose him, fled to Shiras, where he was put to death by his own subjects; and his son Lutuf-Ali-Khan retired into Southern Persia.—These events happened in the year 1792.

The successful Aga-Mamet-Khan had now no rival to contend with, but Hidaet-Khan, of Gilan, to whom Murtafa-Kuli-Khan had fled after the death of Ali-Murat.—Aga-Mamet-Khan was the implacable enemy of Hidaet, and being now master of Persia, he resolved to avenge himself on this Prince for former injuries, as well as for having afforded an asylum to his perfidious brother. But before he declared war, he sent an embassy to demand an explicit declaration, whether Hidaet would acknowledge him as supreme Ruler of Persia, become tributary, and consequently appear at his Court to pay him the homage due to a Sovereign. Hidaet-Khan being apprehensive of treachery, sent an answer in writing, that he would acknowledge him as his Sovereign, was willing to pay tribute, and to send his son as an hostage, but refused to appear before him in person. On receiving this answer, Aga-Mamet-Khan sent a powerful army against him. Hidaet being aware that he could not defend himself at Rasht, his place of residence, sent all his treasure to the port of Sinfil, intending to embark with it in the

the Russian frigates at anchor there. He arrived at that town with his family and the most faithful of his servants, being determined to seek an asylum in Russia, if he could not obtain pacific conditions from Aga-Mamet-Khan. After a month's siege the enemy entered Sinfil; and Hidaet, with his sons, hastily left that place in a boat, with an intention of going on board a Russian vessel.—But, for reasons foreign to this narrative, the Russians refused him protection. Meantime the enemy reached the shore; Hidaet was shot in the boat, fell into the water, and thus terminated his life: when a great part of his treasures were re-landed. His sons were brought to Aga-Mamet-Khan, who caused them to be made eunuchs.

Murtafa-Kuli-Khan, having taken the precaution to retire into the dominions of Fett-Ali-Khan, of Derbent, who died about that time, had the good fortune to escape, in May 1792, to Astrakhan, where I saw him. He afterwards went to St. Petersburg, and now resides at Kislar, with a considerable pension granted by Russia, who has taken him under her protection. After this series of events, Aga-Mamet-Khan remained absolute Sovereign of Persia. It is said that, notwithstanding the deformity of his person, his love of justice renders him generally respected. He is of the tribe of Kadshar, whose faithful adherents placed him on the throne of Persia. Of the remaining brothers, Dshaffar-Kuli-Khan lost his life in the commotions, another was killed by the Turcomans, and Mustapha-Kuli-Khan was also deprived of his fight. Aga-Mamet-Khan has nominated as his successor, Baba-Serdar-Khan, the son of his brother who fell by the hands of

the Turcomans. The present Sovereign is about fifty-five years of age, tall, and ill-favoured; and though an eunuch, he keeps a number of concubines. He is said to be ambitious, proud, and rather mercenary; but uncommonly prudent and artful. Persia appears to have acknowledged him for her sovereign, more from a desire of peace than any real attachment.

During my residence in Astrakhan, I became acquainted with the heirs of the late Grigori Safarov Shafraks, the Armenian, who sold the celebrated large diamond, which is now set in the Imperial sceptre of Russia. The history of this diamond, which holds so distinguished a place among those of the very first water, may probably afford entertainment to my readers, as I shall thereby refute many false reports which have been circulated on this subject.

Shah Nadir had in his throne two principal Indian diamonds; one of which was called the Sun of the Sea, and the other, the Moon of the Mountain. At the time of his assassination, many precious ornaments belonging to the crown were pillaged, and afterwards secretly disposed of by the soldiers who shared the plunder.

Shafraks, commonly known at Astrakhan by the name of Millionshik, or, the man of millions, then resided at Bassora, with two of his brothers. One day a chief of the Avganians applied to him, and secretly proposed to sell, for a very moderate sum, the beforementioned diamond, which probably was that called the Moon of the Mountain, together with a very large emerald, a ruby of a considerable size, and other precious

precious stones of less value. Shafrafs was astonished at the offer, and pretending that he had not a sufficient sum to purchase these jewels, he demanded time to consult with his brothers on the subject. The vender, probably from suspicious motives, did not again make his appearance.

Shafrafs, with the approbation of his brothers, immediately went in search of the stranger with the jewels, but he had left Bassora. The Armenian, however, met him accidentally at Bagdad, and concluded the bargain by paying him fifty thousand piastras for all the jewels in his possession. — Shafrafs and his brothers being conscious that it was necessary to observe the most profound secrecy respecting this purchase, resolved, on account of their commercial connections, to remain at Bassora.

After a lapse of twelve years, Grigori Shafrafs, with the consent of his brothers, set off with the largest of the jewels, which had till then been concealed. He directed his route through Sham and Constantinople, and afterwards by land through Hungary and Silesia to the city of Amsterdam, where he publicly offered his jewels for sale.

The English Government is said to have been among the bidders. The Court of Russia sent for the large diamond, with a proposal to reimburse all reasonable expences, if the price could not be agreed upon. When the diamond arrived, the Russian Minister, Count Panin, made the following offer to Shafrafs, whose negotiator, M. Lafaref, was then jeweller to the Court. Besides the patent of hereditary nobility, demanded by the vender, he was to receive an annual pension of six thousand rubles during life, five hundred thousand rubles

in cash, one-fifth part of which was to be payable on demand, and the remainder in the space of ten years, by regular instalments. The capricious Shafraks likewise claimed the honour of nobility for his brothers, and various other immunities or advantages, and persisted so obstinately in his demands, that the negotiation was frustrated, and the diamond returned.

Shafraks was now in great perplexity. He had involved himself in expences, was obliged to pay interest for considerable sums he had borrowed, and there was no prospect of selling the jewel to advantage. His negotiators left him in that perplexity, in order to profit by his mismanagement. To elude his creditors, he was obliged to abscond to Astrakhan. — At length, the negotiation with Russia was recommenced by Count Grigory Grigorievitch Orlov, who was afterwards created a Prince of the Empire; and the diamond was purchased for four hundred and fifty thousand rubles ready money, together with the grant of Russian nobility. Of that sum, it is said, one hundred and twenty thousand rubles fell to the share of the negotiators, for commission, interest, and similar expences. Shafraks settled at Astrakhan, and his riches, which by inheritance devolved to his daughters, have, by the extravagance of his sons-in-law, been in a great measure dissipated.

With a proposal to reimburse all reasonable expences, if the price could not be agreed upon. When the diamond arrived, the Russian Minister, Count Panin, made the following offer to Shafraks, whose negotiator, M. Lantier, was then Jeweller to the Court. Besides the payment of forty thousand rubles, he was to receive an annual pension of six thousand rubles during life, five hundred thousand rubles



Journey from Astrakhan to the Lines of the Caucasus.

IT would have given me much satisfaction to have protracted my stay at Astrakhan, where I found numerous objects of amusement and instruction hitherto unexplored, though M. GMELIN has published a detailed description of this important city. But as the autumn approached, I was desirous to obtain some knowledge of Mount Caucasus, though I had a long journey to make into Taurida. I was consequently obliged to hasten my departure, and left Astrakhan with regret.

On the 26th of August, in the afternoon, I directed my travelling carriages to be ferried to the western bank of the Volga; and on the evening of the same day, the Captain of this

Port, Brigadier Akhmatof, ordered one of the Admiralty barges to conduct me and my family to that place, where we passed the night in a very convenient ferry-house, built for the accommodation of travellers.

On the 27th in the morning, we began our journey on the road to Kislar. Two versts from the principal current, we travelled in a retrograde direction, and passed over a floating bridge constructed of solid timber, which had lately been rebuilt. We then crossed the adjacent arm Solanka, called in the Tartar language Baltshahtsha, and in the Kalmuk Khonkoll. It issues from the main river, opposite the higher part of Astrakhan, and again falls into it below that city. At the distance of seven versts from Astrakhan, we passed another branch of water which the Tartars call Tinak. It runs somewhat higher than the Solanka, and proceeds from the Volga in a Western direction into the uneven steppe, forming some standing pools between the eminences. At the part where the Kislar road leads over this branch of water, there is a military post of the Kozaks, called Tinakskoi; and on the opposite side is an eminence, called the Mayashnoi Bugor, or hillock for signals. Near the Tinak, and another branch of water proceeding from an higher part of the Volga, immediately below the Sharennoi Bugor, the Tartars have planted melon gardens in a few fertile spots. They are watered from the abovementioned branches, by peculiar machines.

Near these branches we passed another which the Tartars call Malgara; and, after travelling twenty-two versts and a half from Astrakhan, we reached the arm of water called Koskotshu, which

which issues from the Volga, and terminates in the steppe. Here is established a post-station; and at this place, as well as at all the others where we stopped, horses were kept in readiness for our journey.

The whole of this road lay on an uneven and rather sandy steppe, into which the beforementioned arm of water extended, and formed sedgy marshes lying between the sand hills, though, in general, unconnected with each other. Besides these, we noticed several deep lakes called Beshkoll; and the hills were particularly conspicuous, when viewed from the opposite side.

The lower road of Kislar which crosses the Koskotschu, runs close to the sea-shore, in the vicinity of the post-station. But as this arm of water, and all the succeeding branches of the Volga, on the steppe, were swelled by the long-continued S. E. sea-winds, and as the fords were too deep, we were obliged to make a circuit of about twenty versts, by proceeding in a western direction along the Beshkoll. Meantime we dispatched an express on horseback, by the usual road to the post of Glubokinskoi, distant only twelve versts, that he might send the horses to meet us on our circuitous road, which was ten versts from that station. Glubokinskoi is a remarkable place; it contains a number of inhabitants; and the Bolshaya Solanka is a noted quay to which flat-bottomed vessels are sent to be freighted with salt.

At the extremity of the Beshkoll, we passed near a long saline lake called Beshkol'skoi, which at this period had deposited a considerable incrustation of salt around its edge. The basin-like form of this lake, the shore of which is indented with traces of rain, sufficiently indicates, that, together with some smaller adjacent

adjacent salt-pools, it has originated from a sea-gulph covered with drift-sand. The upper part of the banks of the salt-lakes in this tract was overgrown with the perennial *Salicornia strobilacea*, which covered several spots of the soil. Intermingled with this plant there grew in abundance, and in full blossom, the *Salsola monandra* and *rosacea*, *Polycnemum sedifolium*, *Chenopodium maritimum*, *Statice fruticosa* and *Frankenia hirsuta*. The surface of the low moist shore was covered with an intermixture of the green leaves and red blossoms of the *Salicornia herbacea*, but not a plant was to be seen near the saline waters.

Beyond the salt-lakes of Beshkoll, we travelled over a high steppe, and passed by another branch of water which issues from the Volga, and is called Baigushuk. We proceeded over the continued high steppe to the Ashe-Baigushuk, signifying the bitter or brackish Baigushuk, which joins the former branch, and certainly is the great Solanka before-mentioned. Here the Tartar Yurtes were stationed. On the same evening, we travelled eighteen versts farther to the small lake Bugulshan, to which we had ordered post horses from the village Griseva, or Dshuruk, situated fifteen versts thence on the direct road, and inhabited by Kozaks.

The distance from the Tinak, to the branch of water called Dshuruk and the station on its banks, is computed by one mensuration, to be seventy-three versts, but by another survey it is only sixty-seven versts and a half. The distance from Koskotschu to Glubokin'skaya-pristan is twelve versts, and thence to the station Kurotschkina, through which we did not pass, fifteen versts, and lastly, eighteen versts to Shuruk, measured from the nearest post-road. Half way between Tinak and
Shuruk,

Shuruk, there is an arm of water which runs into the country, by the Tartars called Alata, and by the Kalmuks, Kolkofhu; the water of Kurotshkin immediately follows, and at length the Kartufan, which, as well as the Dshuruk, proceeds from a common outlet of the Volga. All these waters were impassable in consequence of the sea-winds, and we were therefore necessitated to take the circuitous road before described.

In the vicinity of these branches of water, such as Malgara, Koskotshu, Beshkoll, Baigushuk, Alata, Kurotshkin, Kartufan, and Shuruk, many saline lakes and pools of different extent are scattered, which in summer produce incrustations of salt, that are collected from the most considerable of their number for the Imperial magazines, and transported by water. This species of salt, however, is obtained from lakes which I shall have occasion to mention in the sequel*. Those saline lakes, from their adjacency to the Caspian Sea, and their natural formation, appear to have originally been gulphs, which are indebted for the salt they contain, to the sea-water confined in them, and diminished by evaporation. They seem to have lost their former communication with the sea, either by having been filled up

* The salt sold by government is mostly collected from the following lakes: 1st, from the six principal, those of Basinski and Bashmatshagi, distant one hundred and thirty versts from Astrakhan; 2d, from the seven lakes of Kobylski, distant one hundred and sixteen versts; 3d, from six lakes in the vicinity of Kostromskoi, seventy versts from Astrakhan, where a salt guard is stationed near Dshuruk; 4th, from a lake adjacent to Darminskoi, distant forty versts from the city; 5th, from the five remarkable lakes in the neighbourhood of Baigush, distant thirty-four versts; and the sixth from the salt-lake of Orloffskoi, distant one hundred and forty versts. The salt obtained from these lakes is transported along the Volga to the interior provinces of the Empire.

with mire, or by the gradual retreat of its waters. Most of these lakes are found in very extensive cavities of the steppe, in which a large quantity of sea-water remained, and its concentrated brine was necessarily collected in the lowest situations. All the small lakes adjacent to the Caspian Sea, especially those between the Volga and the Kuma, as likewise the lakes of Taurida, appear to have had a similar origin.

On the 28th in the morning, we first passed a small salt-pit, and afterwards a larger winding lake called Kartufanskoi, which had a considerable incrustation of salt. In the intersections formed by the rain along its steep bank, we saw the solitary *Salicornia foliata*, and a remarkable species of creeping grass, which in its size and foliage resembled the *Agrostis pungens*, but produced a very different ear, with simple filaments and double anthers. On the lowest bank, I saw marine plants similar to those formerly mentioned. I also observed among the *Salicornia herbacea*, a non-descript genus belonging to this family of plants, which I have termed *Salicornia pygmæa*. From the saline lake of Kartufanskoi the road at first extended towards the S. W., and somewhat farther it took a straight southern direction over an eminence, on the summit of which there was a pit filled with drift-sand, mixed with fragments of shells, and entirely covered with the *Alhagi*. We descended from this height to the large arm of water called Kartufan, and after travelling over several elevations and saline marshes, we arrived at the Dshuruk, a branch of water covered with the large Caspian sedge. The *Statice scoparia* grows abundantly in the marshes, and its leaves are generally covered, on the lower side, with large saline globules like drops of dew. This plant is collected for making

making brooms, along the outlets of the Volga, near Astrakhan. About one verst and a half from the dry extremity of the before-mentioned branch of water, there is a post-house, in a decayed state, and a small village of twelve farm-houses, inhabited by the Kozaks of Astrakhan.

We travelled along the bank of these rushy marshes till we reached their upper extremity: they abound with various species of wild fowl; on the miry bank we observed the *Hippuris*, and in the water, the *Najas maritima*, and *Marfilea natans* growing in abundance. After passing an eminence, we saw a saline lake nearly dry, which had deposited a considerable crust of salt upon its mire. We then proceeded over another height and a small salt-marsh. The nearest ditch of water which we crossed was called Adshuk-hadshi, by my Tartar guide; and we afterwards passed over a salt-marsh called Etikefhee, beyond which the next elevation terminates with a hillock of a singular appearance. In this region we observed only marine plants which grew close to the ground, and overspread its surface; though in other situations they were erect. The *Atriplex laciniata* was most numerous: the *Statice scoparia* alone had straight stalks; it appeared in many spots as if sown, and was in full blossom.

The surface of all the higher part of the steppe, over which we had travelled, was a mixture of clay and sand; but the banks confining the branches of water and circular pits were covered with grass. These pits have no communication with the sea; yet the water which they contained was, in consequence of its partial evaporation, strongly impregnated with salt, but less so where the drift-sand had beenedulcorated by
the

the rain-water. On the elevations or ridges which extended from the western part of the steppe, there were several small sand-banks entirely covered with the *Alhagi*.

Beyond Etikeshee we observed large sand-hills, on which the *Nitraria* flourished in a saline soil covered with drift-sand. We next discovered two dry saline lakes surrounded with eminences, one of which was like a figure of 6, and environed by a dry and elevated bank. In this we found saline incrustations marked with figures resembling trees. The footsteps of horses in the mire were covered with a hollow crust of salt similar to ice. The *Salicornia strobilacea* not only grew here in the same profusion as near the other lakes, but even so exuberantly, that a single plant often covered more than a square fathom of the surface.

We left this saline tract, and after travelling over the heights we arrived at a large branch of water called Kara-baitall. It terminates in a bay bordered by an extensive valley, skirted as it were by a moving sea of sand, which presented a prospect such as I had never before witnessed among sand-banks. The water in this gulph was of a greenish colour, like that of the Caspian Sea. It is evident, however, that this water originated from the lower part of the river, before it fell into that sea.—Proceeding along the bank for some distance, we passed over eminences to the first of the three branches of water, by the Tartars and Kalmuks called Bassis, and by the Russians, Baffi. Soon afterwards we reached the second branch, where we saw a decayed post-house belonging to the station established there, and called Bashmotshagi, twenty-two versts and a half from the Kara-baitall. Here several thousand horses belonging

belonging to the Kalmuks of Yandyk were watered ; a sight which not a little contributed to enliven the prospect of the country, in the midst of this desert. Herds of camels scattered over the hills ; a romantic variety of eminences ; marshes frequented by numbers of the scarcest birds ; salt-pits and lakes ; a peculiar kind of verdure which flourishes in a saline soil ; exclusive of other common European plants, rendered my journey through the desert uncommonly agreeable, especially on this and the subsequent day.

We travelled round the extremity of the second Bassis, which was encompassed by a low sandy country, frequently inundated by the sea, and passed near the third Bassis, where we saw several dry salt-pits and two small saline lakes. On the eminences we observed a remarkable kind of plant which flourished in great abundance, being frequently from five to six feet high, and similar to the *Salsola ericoides*. After travelling over various gentle elevations, sometimes sandy, sometimes argillaceous, as well as over an uneven steppe, we arrived at the pool Shedeli, or, as the Russians name it, Sinfili. Here we found another post-station, distant twenty-two versts and a half from the former.

This water proceeds from the far-extended bay of the Volga. It forms several deep marshes overgrown with sedge ; they are filled by the sea winds, and contain numbers of large and excellent fish of different kinds. The proper branch terminates near the post-road, but when long continued and violent hurricanes from the sea repel the water from the inlets of the Volga, it passes over the road, and completely inundates the lower region of the steppe to a great extent. Hence the soil, being covered with a brackish water, is impregnated with salt, and produces

produces marine plants. To the right of our road on the steppe, were likewise several salt-lakes, of a nature similar to those beforementioned.

Between Shuruk and Shedeli, at which latter place we arrived towards night, several other branches of water proceed from the Volga, and run westward into the steppe, but do not uniformly extend as far as the post-road of Kislar. The first branch, on leaving Shuruk, is called by the Kalmuks, Utu-Shuruk, by the Tartars, Sheler-shekan, and by the Russians, Blagaya Krep. — Then succeeds the branch of water beforementioned, which the Tartars call Karabaital, and the Russians Kobylskaya-retshka, or the river of shrimps. Along the northern side, between the elevations of the steppe, there are scattered many large and small lakes of a circular form: they deposit salt, which is conveyed thence in boats to the Imperial magazines. The seven most considerable of these lakes are generally called by the names of Kobylski, or Kobylinski; and two others that deposit a reddish salt, having an odour like that of violets, are called Malinofskye, or the raspberry lakes. Several pools, which have received no name, also deposit a small quantity of salt. The boats are sent up the Kobylskaya-retshka, and are loaded near the Kobylskaya-pristan, with the salt which has been previously been carried thither.

Near the three inlets of water called Baffis, which unite towards the mouth of the Volga, and form the Podresnaya-retshka, we observed several shallow salt-lakes of a circular form. Six of these, on account of their rich impregnation with that substance, are appropriated to the Crown, and called the lakes of Baffinski, but the others have no distinct names.

On the southern bank of another arm of water, which runs parallel with that beforementioned, and which the Kalmuks and Tartars denominate Kultok-Kon, there is a large salt-lake called Orlofskoe. All these arms of water with which the Burгутtu unites between Orlofskoe and Shedeli, have received from the Kalmuks the general name of Matzak, by the Russians corrupted into Motshagi. In the sedgy marshes of these waters the Kalmuks find abundant fodder, and a warm shelter for their cattle during winter. The denomination of Motshagi is applied to these branches, as far as the Kuma, where the southern boundary of the winter pasturage of the Kalmuks is now determined. From this line begin the pastures of the Trukhmenes or Turcomans, who in winter retire towards the Terek.

On the 29th of August, about a quarter of a verst from the post-house, and at the extremity of the Shedeli, we passed a village consisting of fifty habitations belonging to the Tartars of Kafan. These people were formerly more numerous, and dwelt near the Upper Sarpa; but, on account of the unwholesome situation, they were transplaced hither; though, at first, they settled somewhat lower on the banks of the Shedeli.

From this place we proceeded over high sand-banks, and a variety of hills and vallies, which mostly extended in a North-West direction. On one of the highest elevations we observed a considerable bank of quicksand, which the violent South West wind, that prevailed since our departure from Astrakhan, had heaped in ridges. All the sand on this side is thrown up by the Caspian Sea from the masses carried along by the current of the Volga, when it inundates the inlets and low regions; and

and the sand being dried after the water retires, it is gradually carried by the winds into the steppe, and accumulated in sand-banks. It is probable that all the sand-hills on the western side of the Volga, and as far as the Kuma, have thus originated. The hillocks occupy tolerably wide tracts of the steppes, and have in some degree changed the face of the low countries, which perhaps at a former period stretched in an uninterrupted expanse from the Caspian Sea to the saline marshes, whence the Manyth derives its source. If these sand-hills which have closed the mouth of the Kuma did not exist, the Caspian Sea would, in my opinion, by rising only a few fathoms, inundate the low steppe near the source of the Manyth, and thus have a continual outlet.

We descended from these banks of drift-sand, of which we observed a long succession, to a lower arm of water called by my Tartars, the Kokshi or Kokshon. At a short distance, after crossing several elevations with sand-hills and pits in a N.W. direction, where scarcely any thing grew but two kinds of wormwood, the *Artemisia maritima* and *Austriaca*, we arrived at a narrow marsh, called Shuraly, at the extremity of which we saw an isle covered with rushes, and around it a wide valley which is sometimes inundated by the sea. Thence we proceeded over a steppe alternately level and varied with gentle ridges, among which there were several salt-pits. Here the *Frankenia hirsuta*, and the *Phleum schænoides* and *Schænus aculeata* two similar plants, grew in great abundance. Besides these, the soil produced nothing but the *Salicornia herbacea* and *Atriplex lacinata*. After travelling twenty-two versts and a half, we came to the next post-station situated on the banks of a branch of
water

water called Batkaly, from which it takes its name ; where we observed a spacious hut built of clay.

Beyond Batkaly we passed a number of sandy elevations, and flat marshes which are inundated by the sea, and the soil of which is generally impregnated with saline particles. The *Ceratocarpus salinus*, or *Atriplex pedunculata*, Lin., *Statice scoparia*, and *Tamarix Gallica* grow abundantly in the marshes. We next came to two swampy inlets called by the Kalmuks, Gashoon-Sala, and by the Russians, with the same meaning, Gorkaya-reka, or the bitter river. The Tartars call the second of these inlets Kallaus, and the Kalmuks, Shurguttu ; I observed on their muddy and saline banks, grey tamarisks, some of which were in blossom. Very few of these innumerable plants were a foot high, and grew from seeds almost imperceptible, which probably had germinated the preceding autumn, and a few of which were now in blossom. Some gardeners have doubted, whether the seed of the Tamarisk, as well as those of willows and poplars, would produce plants, if superficially sown in a very moist soil, or when spontaneously scattered. Yet the preceding observation satisfactorily proves to me, that they really grow from seeds. It would probably be better to place them under glasses, like most of the delicate and fructiferous seeds. Thus I have found, that not only the seeds of the *Auricula* and willow, but several species or varieties of the *Rhododendron* and *Azalea*, will germinate easily and abundantly ; though it is well known that those seeds vegetate with difficulty ; I have also effected the same purpose with the pollen of fern and moss. These plants thrive more luxuriantly when the glasses are removed in the evening, at night, or during a gentle shower, than if they were exposed to the air and the sun. All the mountain-

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plants, which are, however, very difficult to rear, should be carefully attended to in this manner; because the air under the glasses becomes as strongly phlogisticated as it usually is on high mountains.

At length, about twenty versts from the Caspian Sea, after descending the last-mentioned sandy ridge behind the Shurguttu, we arrived at a low and uniform plain, which extended farther than the eye could reach; though it was intersected with several small lakes, and streamlets. From this plain, which the sea-water, when agitated by storms, inundates far beyond the road, we re-ascended towards the West, and after travelling five versts, arrived at the inlet called Alagann, or Ulagann-Ternik, which is twenty-two versts and a half from Batkaly, and is provided with a post-station. This plain, in consequence of the inundation from the sea, has been universally impregnated with salt, and produces various marine plants. Among these I remarked the *Salsola soda* in abundance, a plant which is not very common in other tracts. The exuberant vegetation of these plants has in many places produced a superficial stratum of black mould. I observed near several of the brackish pools, a number of young tamarisks springing from seed, some of which were nearly a foot high, and in blossom. The *Panicum Dactylon* was the predominant plant here, as well as in all the salt marshes which we passed this day, and it overspread considerable tracts of the soil.

During this day's journey we met several caravans of the Tartar Arbes, or Araba, signifying two-wheeled carts, which were partly loaded with madder, and partly with the leaves of the *Cotinus*, or Yaprak. These two commodities are used at Astrakhan for dying cotton, and manufacturing Morocco leather.

leather. Some of the vehicles also contained crude soda, or Kalakar. It were much to be wished that an attempt were made to manufacture this necessary article, the exportation of which would be most advantageous after its purification. All the borders of the Caspian Sea from the Volga to the Terek, and the extensive salt-marshes near the source of the Manytsh, produce the marine plants proper for that purpose, in great profusion.

Our quarters for the night, at Ulagann-Ternik, were far from being agreeable, on account of the midges which, even at this time, infested these regions in numerous swarms. Very early on the 30th of August, an armed troop of Turcomans came to escort us, and a relay of horses had been ordered at the next station, for the continuance of our journey. — We rode through the upper and fordable part of the inlet of Ulagann-Ternik, and the adjacent extensive low country which was overspread with the *Atriplex laciniata*, the *Ceratocarpus salinus*, and also in some places with the *Statice scoparia* in blossom, which on the surface exhibited a beautiful tint of deep violet colour. We afterwards travelled over low ridges into the vast sea-valley Alabuga, which is watered by romantic, connected inlets and lakes, and at certain seasons it is mostly inundated by the sea. Though the inundation was not yet at its greatest height, we were often obliged to pass through deep water, which in its retreat from these low regions generally leaves a multitude of fish on the dry land. Near the most southern large inlet, where a post-station is established at twenty-two vershs and a half distance, we found a felt tent pitched for our accommodation by the Trukhmenes, near which I was received by the chiefs

and elders of that people.—The guides who had accompanied me from Astrakhan, left me at this place.—As the vicinity of the Terek has been described by the naturalists who formerly travelled in that country, I resolved not to continue my route by the road of Kislar, but rather across the desert to the river Kuma. I wished to visit this river, especially as its banks had recently been peopled, and had not been described by any traveller. Thus I expected to make a more instructive, and safer tour by the fortrefs of Georgiefsk, at present the principal place on the Lines of the Caucasus.

The former travellers in these regions have given but a superficial description of the country adjacent to the road leading to Kislar, though the region along the Caspian Sea is very remarkable, on account of the manifest traces of its ancient connection with the Meotic gulph of the Black Sea. I propose to supply this deficiency from an authentic journal kept by an engineer, and in which an account is given of the country extending from Alabuga to Kislar.

About twenty-six versts and a half from Alabuga, in a S. W. direction, a branch of water flows from the Caspian Sea, and extends into the steppe, forming several inlets, for many versts towards the West. It terminates in a large lake, known in different languages by the name of the White Lake; in the Tartar tongue, Ak-Kul, in the Kalmuk, Tzagann Noor, and in the Russian, Byeloi ozero. The Kalmuks call its connection with the sea, Erken-Aman. The post-road is often interrupted by the extensive inundation of this lake over the steppe, during the sea-winds. There is a post-station at this place. Between the low country of Alabuga, and the current of the White Lake, I observed

observed another remarkable inlet of the sea-valley, called by the Kalmuks, Bugatta, which has many lakes and marshes overgrown with sedge. At the distance of twenty-three versts from the White Lake, there is an ancient channel of the river Kuma, which proceeds to a great distance in the western steppe, and forms connected pools. This branch, which is partly dried up in summer, terminates in small lakes between sand-hills, near the Caspian Sea, and is, by the Kalmuks and Tartars, called Kuduk. The post-station Khudutzkaya is in its vicinity. At a small distance there is another branch of the Kuma, which the Russians call the first Podkumok, or Malaya Kuma; but the Tartars and Kalmuks have denominated it, together with the succeeding, simply Kuma. It forms a small chain of lakes, and pools overgrown with sedge, but does not extend to the sea, as it is absorbed by the drift-sand. — A third branch of this river, by the Russians called Podkumok, or Srednaya Kuma, which signifies the middle current, likewise does not reach the sea. Thus the whole river Kuma, the principal bed of which continues beyond the collateral branch, with a chain of considerable lakes and marshes, forms many small pools in the vicinity of the sea-shore, where it is lost in the accumulated sand-banks. When the winds swell the sea on this side, and force its waters into the gulph, situated directly opposite the branches of the Kuma, it overflows the lakes of that river, and the current appears to have a regular efflux. This gulph is denominated by the Russians, Kumskoi Kultuk, and by the Tartars and Kalmuks, Kofukai. — Between the Kuduk and the first Podkumok, there are two salt-lakes connected with each other in the form of a horse-shoe, called by the

the

the Kalmuks, Yanffyt. — On the southern branch of the Kuma, we arrived at a post-station distant sixteen versts from the former.

Before I proceed, I must intreat the reader to examine the map, and compare what I have hitherto said of the low countries inundated by the Caspian Sea, with what relates to the saline low region near the source of the Manytsh. It is very probable, nay, almost beyond a doubt, that the low countries of Ulagann-Ternik, Alabuga, and Byeloe, are the old bed of the strait, which, agreeable to the hypothesis advanced in the third part of my former journey, united the Caspian Sea with that of Azof*. Even at this day, the Caspian Sea, when swelled by tempests, easily overflows the extensive low countries beforementioned. The sand-hills which at present separate those low countries from that of the Manytsh, manifestly originate from the sand-banks thrown up by the Caspian Sea, and which are carried by the wind into the steppe; or perhaps they were in some degree formed by the sand that remained in the strait itself, as they occupy only a small tract between the two vallies. These sands have also choaked up the passage at the mouth of the large river Kuma, which formerly had a free current into the Caspian Sea, by the gulph of the same name.

About fifty versts, southward from the Kuma, the Caspian Sea forms a large bay, the extremity of which expands into an extensive lake surrounded by eminences, and called by the Russians, Kolpitshie-osero, or the lake of the pelican, by the Tartars, Ak-Kul, or the White Lake, and by the Kalmuks Khalvun-Tzagan-Noor, or, the White Lake of the Heron. This lake supplies a long branch with water, which extends into the steppe,

* Vide pp. 78. and following of this volume.

and is called Yarlatshi by the Tartars, and by the Kalmuks, Shakrin-Tzagan-Noor. On the northern side of the Kolpitshie osero, and to the right of the road to Astrakhan, I observed a large sepulchral hillock, by the Russians called Bomby, and by the Kalmuks, Toppelge.

Between this gulph and the river Kuma, we observed three other bays, or connected lakes, which lay in a western direction and were covered with rushes. The first is called by the Tartars Kartapysh, the second, Dvoinoe osero, or the double lake, and the third, by the Russians, Tarakanie osero, or the lake of the moths, by the Tartars, Uffun Boruk, and by the Kalmuks, Tzagan-Noor. Near the second of these lakes is a hillock called Tarakanie Bugor, or the hillock of moths, where a post-station is established. Beside this eminence, towards the West, are two lakes which contain Epfom salt. When dried by the heat of the sun, they yield a small quantity of Glauber's salt which crystallises in a cylindrical form. Farther westward in the steppe, there is a large lake, rich in salt, known among the Tartars and Kalmuks by the name of Akhmurfa, and which supplies them with that article for domestic consumption.

Fifteen versts from the lake Kolpitshie, where there is a post-station, several chains of lakes extend from the sea, which the Tartars call by the general name of Shanharafly. The most southern line of these waters stretches the farthest into the steppe. In this neighbourhood the Caspian Sea forms a bay, with broken banks, and numerous isles. This water has a quay called Otshinskaya Pristan, where all the transports destined for Kislar find an anchorage. Next follow the different mouths of the rapid river Terek, which has thrown up a considerable promontory

promontory of sand and soil. These mouths may be distinctly traced on the map.

The Trukhmenes or Turcomans, with whom I was now obliged to continue my journey, are a wealthy, well formed, lively people, and more attached to ornamental dress than any other tribe of the steppes. They are by no means to be compared with their brethren who inhabit the eastern shore of the Caspian Sea. These people are independent, but poor and uncivilized, as I have myself frequently observed, while the other Trukhmenes have, under their present political constitution, improved much in comeliness and gaiety. Before the Kalmuks took possession of the steppe of the Volga, they subjected these very people, made them tributary, and compelled them to migrate over the Yaik. Here they became subject to the horde of the Khans of Torgot, who, however, granted them the free exercise of the Mahometan religion. On the retreat of this horde* from the steppe, the Turcomans rose in arms, refused to accompany their fugitive oppressors, and became vassals to Russia. They have since been removed to the steppe of Kislar, where they are permitted to lead a wandering life with their flocks and herds, between the Kuma and the Terek. They have a great number of camels, black cattle, sheep and horses. Their horses resemble the English breed, and are high, swift, strong, and durable; they have hard hoofs, and are upon the whole a much superior breed to the lean and narrow-chested horses of the Kalmuks. They dwell in felt tents exactly similar to those of the Kalmuks; and their only fuel is

* Vide, Sammlung historischer Nachrichten, &c. or, A Collection of Historical Memoirs relative to the Mungolian Nations : Part I. p. 59.

dried cow-dung and rushes. Their principal food is flesh, four milk, a small quantity of groats, and meal, which they purchase from the Russians ; but their favourite food is horse-flesh. These people appear to lead a very tranquil life ; being obliged to perform no other services, than to furnish post-horses, and do military duty. They are governed by a particular magistrate called *Pristaf*, who has a very good place, lives among them with several interpreters, watches over their conduct, and determines all their disputes, to which they seem much inclined. It has often been suspected that they intended to repass the Volga and Yaik, in order to rejoin their brethren ; but it is highly improbable that such an emigration will be attempted, especially in their present state of prosperity, and as the more aged among them are gradually dropping off. The only inconvenience they are subject to, is the want of fresh water, particularly in summer and autumn. A military rank has been conferred on several of their elders or chiefs, and all the rich persons among them appear to be equally desirous to obtain this distinction. The number of their tents amounts to upwards of one thousand. They are a lively, polite, officious, and communicative people, but extremely indolent ; are very expert in archery, and in their excursions on horseback are usually armed with ornamented bows and quivers. They have rich belts and sabres, and are fond of crimson-coloured dresses, adorned with lace ; but this love of finery is not so common among any other tribe inhabiting the steppes : their caps are generally round, and trimmed with black lamb-skins, similar to those of the Poles. They shave their heads quite bare, and many of them also shave their whiskers ; but the old men allow their

beard to grow under the chin. The dress of their women and girls exactly resembles that of the Nagays: and the married women also wear a ring in one of the nostrils, as is customary among the female Tartars at Astrakhan.

From the low country and bay of Alabuga, I travelled S. W. over the surrounding sand-hills. Between these heights I observed two small salt-lakes. When we had reached the summit of these eminences, the road passed over a gently rising, dry, uniform, and sandy steppe, where, besides dry grasses, the only plants we could still distinguish were, wormwood, the bastard wormseed, *Salsola prostrata*, *Chrysocome villosa*; and scattered on different spots, we observed the *Teucrium Polium*, *Salsola laniflora*, *Astragalus tenuifolius*, and *Delphinium Consolida*. On the most elevated summits of these heights, the wind had drifted the sand into banks. About thirty-five versts from Alabuga we came to a considerable ridge of high sand-hills called Dshanaï-Ulan. At this place we reposed during the night, in the vicinity of good clear wells, which were about an arshine and a half deep in the sand. The springs are near the road which leads from Astrakhan to the river Kuma, and on which corn is conveyed. I remarked that the sand here was in some spots cemented with a slimy substance, and that it often formed steep banks. I also frequently observed numbers of shells and fragments of bones intermingled with the sand, and was surprised to find among them a transparent piece of belemnite, which must have been carried, by the current, from the calcareous promontory of the Caucasus, among the sand which formerly composed the bed of the Caspian Sea. The soil of this place produced abundance of the *Elymus*, and *Phlomis Herba venti*,

venti, *Herniaria hirsuta*, *Euphorbia Esula*, and *Chamæsyce*. The last, as well as the bastard wormseed, and the *Delphinium Consolida*, were the only plants which had not been devoured by the hungry cattle of travellers. There was also a considerable number of *Scarites Bucida**, and a few *Tenebriones*.

On the 31st of August I continued my journey in a S. W. direction. We soon descended from the high sand-hills, and arrived at salt-pits of different dimensions, with which the whole plain was intersected, and, as it were, excavated. They were steep along the verge, in consequence of the motion of the water, but became progressively shallow, dry, and destitute of plants. Between those which lay nearest to us, we still found sand; but, advancing farther, we observed only a dry and argillaceous steppe. This numerous series of unconnected salt-pools terminated with a very large saline pond, extending in a longitudinal direction to the West, and beyond it were several others on eminences of a reddish clay. This extensive saline tract is succeeded by a line of drift-sand, and salt-pits, with intermediate sandy elevations. We at length arrived at a level steppe, mostly impregnated with salt, and in several places covered with sand, on which tamarisks and other marine plants were discoverable. This level steppe at length declined, about thirty-five versts from the springs and sand-hills of Dshanaï-Ulan, towards a low saline country of a vast extent, farther than the eye could reach, and bordered on the southern side by a sedgy tract which continued for many versts. The Tartars call the latter Kamyshburun, or the point of reeds, and sometimes Kara-Kuyon, or the black marsh of

* Nov. Spec. Insectorum, Tab. 6.

rushes. It extends towards the first or most northerly Podkumok, a trace of the Kuma, now filled with sand. — These saline plains are diversified with barren, miry, or sandy spots, and verdant meadows. The latter produce scarcely any other plants but the *Scirpi*, and *Cyperi*, *Atriplex laciniata*, *Chenopodium latifolium*, *Salsola hyssopifolia*, *Polycnemum sedifolium*, *Frankenia hirsuta*, *Salicornia herbacea*, *Schænus aculeata*, and *Phleum schænoides*. We also observed several small salt-pits, some of which were dried up, and others contained water.

These saline tracts, or Khaaki, collectively form the continuation of the low country, which is interspersed with numerous salt-pools, whence, as is represented on the map, the Manytsh derives its origin. We arrived there after travelling along the bank of the Sarpa on our road to the Caucasus, near the angle of high land where it rises, in a western direction, towards the river Don. This uniformly low country is evidently the bed of the ancient strait which formerly united the Caspian Sea with that of Azof. Its level is so low, that in spring it is entirely inundated by the snow water. When we farther consider the traces of water, and the very extensive western bays and inundated low countries, particularly those of Alagan-Ternik, Alabuga, Byeloi ofero, and those near the mouth of the Kuma, the probability of a former strait gains additional strength. It is easily perceptible, that without the high sand-banks, accumulated by tempests, the low countries on both sides would form one continued valley, so that if the water of the Caspian Sea were to rise only a few fathoms, it would necessarily overflow towards the river Manytsh. I have

have not been able to learn whether the water of the Kuma, which inundates the low country in spring, extends as far as the Manytsh, and forms a confluence with that river. From the nature and situation of the country, I am induced to believe that this communication actually takes place, and I wish that *a subject of such importance may be farther investigated.* The general saline quality, as well as the surface of this low country, which is mingled with shells, evidently shew that it has formerly been covered by the sea. The numerous salt-lakes, pools, and pits, have been the deepest part of the strait, where the black mud of the sea was accumulated, and in which the confined sea-water concentrated and retained its salt by evaporation. The low places or glens which had outlets, being often washed by rain-water, have gradually lost their inherent saline quality, and are now overgrown with plants, none of which are of a marine species. On the contrary, those deep pits, which are of a circular form, and particularly the argillaceous depths, have still preserved their saline impregnation, and are the true soil for the numberless marine or kali plants with which the steppe abounds. We may reasonably conjecture that a part of the high country, especially where the sand is solid, formerly consisted of either sand-banks, or shallow parts of the ancient strait.

The empty salt-pools or fens are of the same nature as the saline lakes. All the salt-marshes which I observed during this journey, as well as in the Caspian plain, in general, are shallow cavities, which in spring and autumn contain brackish water, but in the first fine weather of May, they entirely evaporate, and resemble the soil of a dried quagmire. Their surface is composed of a tough black mire of different degrees

of thickness. They emit an effluvium like that of putrid eggs, and produce no plants, except the *Salicornia herbacea*, which grows around their edge. Their surface is covered with a whitish efflorescence of salt, or rather with an incrustation, presenting a great variety of that substance. In most places the common digestive salt is predominant: the Epsom or cathartic salts are less frequent in the Caspian steppe. On the contrary, in Siberia *natron*, and cathartic salt, are nearly as common as sea-salt, and intermingled in various proportions *. The higher bank, covered with sand or clayey mire, is productive of other marine plants, particularly the bushy species of *Salicornia*, *Nitraria*, and the like; but the surrounding sandy eminences, in some places, present no traces either of salt or marine plants.

Such is the nature of these saline tracts which are dried up in summer, and have been so frequently mentioned. The lakes containing salt water are commonly very shallow, quite flat at the bottom, and only differ from each other in the quantity of water they contain, which apparently proceeds from springs. Their black mud, when unamixed with sand, is soft, and gradually sinks deeper. The quantity of salt, however, which the lakes, in general, deposit only in the month of May,

* If the assertion of a certain Dutch writer be true, that, according to the process he has published (1), marine salt can be decomposed by mixing it with lime and sand, to the consistence of a tough paste, spreading it on boards to the thickness of half an inch, and placing them for several weeks in a cellar, when a quantity of alkaline salt appears on the surface, it may be supposed, that the Caspian steppes, where the soil is a calcareous sandy marl, ought to produce a large quantity of *natron*. But we do not find this substance here in any particular form. The Siberian soil, on the contrary, where pure *natron* often appears in large quantities, contains no calcareous particles.

(1) *Natuur en Scheidekundige Waarneminge over eenige gewigtige Onderwerpen der Geneeskunde en Oeconomie, in ons Vaderland, door Pet. Driessen. Leyden 1791. 8. Numb. 1.*

as well as the purity of that substance, vary considerably. In these lakes, the water decreases in summer, and retires to some distance from their high banks. None of the salt-lakes and marshes on the western bank of the Caspian Sea, have such a stratified incrustation of salt annually increasing, as may be observed in the lakes of Bogdo, Elton, and Inderfk, near the river Yaik. There, the ample store is continually supplied and increased by rich salt-springs; while all the saline particles of the other lakes are completely dissolved by the rains of autumn and winter.

A considerable saline lake, which the Russians call Madsharkoe osero, or the Hungarian lake, is situated about twelve versts from our road, in the extensive low country just described, and from which the Manytsh derives its source. The name of that lake probably originated from a tradition of the highland tribes, and principally from the Circassians and Tartars, who are permitted to take their culinary salt from this place. It is situated on the edge of the low country, is surrounded by a dry steppe, has nothing peculiar to distinguish it from the other saline lakes, and is four versts in length, while its distance from Byeloi Ilmen, near the Kuma, is computed to be twenty-two versts and a half. It deposits a considerable quantity of salt every summer, as do also two smaller lakes, situated more towards the North in the steppe, one of which is called by the Kalmuks, Bargo-Dabassun, from the hillock Bargo in its vicinity. These lakes have been granted to the inhabitants of the Lines of Caucasus, and to the Kalmuks, for the benefit of
their

their cattle, because the communication by water was too far distant to effect the conveyance of salt to the magazines.

We stopped to dine at the entrance of the abovementioned narrow tract of country, called Kamyshburun, which was overgrown with sedge, and where we found the *Cyperus esculentus* growing in abundance. In the afternoon, we continued our journey with fresh horses which had been prepared for us at this place; and keeping the sedgy tract in view on our left, we proceeded mostly in a West, and W. N. W. direction; and at length, towards evening, after travelling about fifteen versts, we arrived in the vicinity of the lake Kafak Kul. We passed the night near this lake, the water of which was somewhat fetid; it was surrounded by a continued saline plain. About half way on our road, we observed, on the left towards the Kamyshburun, a cemetery of the Turcomans in the vicinity of a small salt-lake. It consisted, as is represented in the back ground of plate 10, of two square walls, seven arshines high from North to South, and six arshines long, built of unburnt bricks. The East and West fronts of the wall had apertures. Within these walls each family has a separate monumental hillock, with a pole in its centre. They are surrounded with a ditch, except in one place, where five common sepulchral hillocks, likewise environed with separate ditches, seemed to point out a connection with the whole. At one of these monuments there is a piece of freestone, which appears to have been a tomb-stone; and an half cross of polished workmanship is still visible at its broken extremity. We here found the *Seseli dichotomum* growing in a spherical form, a plant which became more common as we approached the sea of Azof.

On



On the 1st of September we observed, in the saline plains around the lake Kafak, besides the usual marine plants, the *Euphorbia Chamæsyce* in abundance, and a small quantity of wild purslain on several spots. The *Frankenia hirsuta* was still in its most beautiful bloom.

Early the next morning we continued our journey, and about five versts to the left we saw a lake covered with rushes, which the Russians call Byeloi Ilmen, and the Kalmuks, Ogoto. Farther on we travelled over sand-banks which were not of a considerable height, and appeared to be the boundary of the low saline country, which had continued of an uniform appearance for upwards of twenty-five versts. On this border of sand-banks we observed many shells of the Caspian Sea, though we had not met with any in the low country, either because they were covered with mire, or entirely decomposed, or perhaps they had been drifted more towards the banks of the ancient sea. We also discovered a few marine plants, and among others, the *Gnaphalium arenarium*, *Gallium saxatile*, *kali*, and in some places the *Alhagi*, as well as liquorice and the *Zygophyllum*, which from the Volga to this place had been rather scarce.

After travelling fifteen versts beyond these sandy elevations, we arrived at a tolerably level and dry steppe. We also observed, towards the Kuma, some altars of earth, similar to those generally raised by the Kalmuks, in their autumnal festival of the lamps, or Sullain-Sfara. We proceeded, for some time, along an old road which led from the Kuma to the salt-lake Madshary, and the Volga. After having travelled thirty versts from our night station, we turned from this road, and pro-

ceeded towards a small inlet formed by the Kuma, where we found fresh horses in readiness.

The low country near this river is impregnated with a small quantity of salt. We observed here a few diminutive tamarisks, but the *Cynanchum*, *Zygophyllum*, and *Centaurea picris* grew in abundance. The bank of the river is frequently covered with sedge, rather low, while the stream is broad and deep, with an argillaceous bed. The water was pretty fresh and transparent; it flowed in a strong current, which, about fifteen versts farther, disappeared. Near this station we saw the tomb of Islam Agasi, chief of a small horde of about one hundred and fifty Nagay families belonging to the cast of Kaffailar, which had been transplaced hither. This sepulchral monument consisted of two huts made of reeds, and without roofs, one of which contained the body of the chief, and the other that of his wife, who survived him but a very short time.

The dry steppe now became quite level, like that of the Sarpa, and produced similar plants, of which scarcely a trace had been left by the flocks and herds, except the *Statice Limonium*, *Polycnemum dichotomum*, and the grey *Salsola*, which resembles the *Ericoidi*: we likewise observed a few small tamarisks on several spots. After travelling about twenty-five versts, we pitched our tent, in the evening, in the midst of the steppe, at some distance from the Kuma, and about six versts from Terny, the first village that has lately been established on the banks of that river. At a distance, towards the W. N. W. we saw the blaze of a large steppe on fire, from which quarter a hot wind had blown upon us during the whole day; though we could not then explain the phenomenon. The *Scolopendra*

pendra morfitans crawled from the crevices of the ground, and surrounded the fires kept by the guards. Towards night the clouds portended rain; but before morning they were dispersed by a violent North wind.

We continued our journey on the second of September; and instead of the bare steppe we had hitherto traversed, we found one tolerably rich in plants, among which were such as delight in a saline soil; for instance, tamarisks, the *Salsola ericoides* and *sedoides*, *Polycnemum dichotomum*, and *oppositifolium*, but particularly, numerous shrubs of liquorice with flat pods. The low country over which we travelled to the village of Ternovka, or Talovye Terny, was covered with beautiful bushes of tamarisks, and along the banks of the river were some coppices of willows and poplars: the former we first observed, on advancing towards the source of the Kuma.

Terny is one of the latest Russian colonies; its inhabitants were transplanted from different provinces into this desert though fertile region. The people, indeed, suffered many hardships in the beginning of their establishment; but the uncommon fruitfulness of the soil affords them a more promising prospect. This village is surrounded by a collateral branch of the Kuma, which is partly dry. In the vicinity of this place there is a bridge over the river, which connects the Tomski * road leading from Tzaritzin to Mosdok.

* This road has received its name from the regiment of infantry commanded by General Tomski, who first pursued this route through the steppe in the year 1773. Their march is described in the third part of my former Travels, from page 581 to page 591.

This road leads to the small Kozak village Volodimerovka, which is situated beyond the Kuma : it was built by Major-General Savelief, who resides at Naur ; a gentleman well known for his studs and excellent economical establishments. He was at that time colonel of the Kozaks ; and in the year 1772 led a company of Dubofski Kozaks from the Volga to the Lines of the Caucasus, and was the first individual who established a colony on the banks of the Kuma. The peasants of Terny generally live in subterraneous dwellings, or Sem-lanki, and many of them are almost destitute of clothing. They have grain in abundance, and their bread is made of the finest wheat ; but the fertile part of the country extends only from seven to eight versts, beyond which the soil again becomes a saline and dry steppe.

Where the road leads from the high country over the more elevated steppe, we observed a sepulchral hillock, the first since our departure from the bank of the Volga. A considerable number of similar tombs were visible on both sides of the Kuma. The principal monument was of an uncommon size, being almost three fathoms high, and upwards of thirty fathoms in diameter. Some smaller hillocks were also perceptible in its vicinity. We likewise remarked several gigantic sepulchral monuments along the Kuma, one of which was even larger than that abovementioned.

On the variegated blackish soil of the higher part of the steppe, the *Colchicum autumnale* was abundant and in blossom. All the plants here, notwithstanding the drought of the season, grew to an extraordinary height. Those which most engaged my

my attention, in consequence of their gigantic size, were the *Ceratocarpus arenarius*, *Statice scoparia*, *Salsola sedoides*, *Polycnemum dichotomum*, *Atriplex patula*, and the less numerous *Atriplex laciniata*. Several species of the *Chenopodium* were, on the contrary, numerous; while various marine plants, common on the steppes of the Caspian Sea, such as the *Salsola baccifera**, *rosacea*, *hyssopifolia*, *brachiata*, and *fruticosa*, *Anabasis aphylla*, and *Atriplex Halimo affinis*, were no longer visible in this neighbourhood.

The higher steppe now formed a steep and considerable ridge, which presented an uneven surface towards the extensive low country. From this steppe we observed a still higher prominence beyond the river Kuma. This ridge, like the high country along the river Sarpa, forms a bank of different degrees of steepness, and of an uniform height; it extends into the low country up the river.

The bank begins immediately above the small village Volodimerovka, where it forms a high angle near the river, and extends, with several inlets, to the South of the steppe towards Mosdok: it is intersected by the deep valleys of Kura and Podkura. The upper part of the high country forms a plain, and is the first rising ground towards the promontory of the Caucasus, though distant upwards of one hundred versts. It appears to have formerly been the shore of the old strait, and probably the ancient mouth of the Kuma was situated higher in this region. Several plants were sufficiently numerous

* *The Anabasis foliosa*, of *Linnaeus*, is a common plant on the steppes; it is somewhat impregnated with salt from the Caspian Sea, is found on all the roads, and is proper for the manufacture of soda.

near the Caucasus, such as the *Crambe orientalis*, *Rhamnus lycioides*, *Crocus vernus*, and *Salvia æthiops* ; but they have not yet extended farther than the bank of this high ridge, and are not indigenous in the northern and eastern parts of this country.

At the distance of seven versts from the large village Malye Madzhary, or Kavkaskoi Ufvat, which belongs to a nobleman, we observed, in a most agreeable situation, on the banks of the Kuma, a farm established for rearing cattle. The bank on this side exhibited several chasms formed by the torrents of rain-water ; and the wood of the low country, which had grown to a good size, presented a charming landscape in the open plain. We now approached the fire which we had discovered on the steppe the preceding evening, or rather, the continued hurricane from the N.W. impelled it directly towards us, close to the bank of the river and the collateral highway. We were therefore obliged, as the most prudent step in such an exigence, to penetrate upwards of a verst through the thick suffocating smoke, mingled with ashes driven by the wind, and also through the almost insupportable heat of the flame: thus we escaped at full gallop, though not without danger. Our Turcoman guides, who were well mounted, gave us the most effectual assistance, by driving our horses, and drawing the carriages with ropes. By these means, towards the evening we reached the village of Ufvat, which lay beyond the reach of the fire. We were much gratified with our hospitable reception in the commodious and well-built manor-house, which afforded us an asylum against the dreadful tempest. The convenience of this residence ; the examination of the much diversified country ; the various repairs of our carriages ; and the expected return of an express

whom I had dispatched to Naur, induced me to stay here for several days.

The Kuma in this place flows in romantic meanders, which, sometimes on the one side, and sometimes on the other, form considerable promontories, called Kuti. Some of these are covered with rushes, while others consist of dry pasturage, and meadows rich in herbage, with several thickets of blackthorn and tamarisks. Along the river there are several high forests, and many coppices among the trees, of which the wild apple, the wild poplar, and thorny pear-tree are most conspicuous. Wild vines were found intertwined in different places; they produced black grapes, about the size of the common pea, which were very delicious, and contained proportionally large stones. Farther on, as we descended, we observed only a few coppices along the banks of the river; but below Ternovka, where the good arable land commences, they were not discoverable.

Near Ternovka the Kuma divides itself into two branches; the principal current, which is about fifteen fathoms broad, is interrupted by a mill-dam, and supplies with water a mill belonging to the lord of the manor; while the water of the other branch, which runs for ten versts in a straiter direction, turns two mills belonging to the boors. The river here, and to the extent of fifteen versts farther, runs with a strong current; it then loses itself in bays and morasses, overgrown with sedge; but towards Volodimerovka it again grows narrower, and flows in a regular bed for about fifteen versts, where, on its left bank, in the low country, we observed several long lakes; it then branches into other lakes, and sedgy marshes, after which
it

it again appears in different places, with a gliding current, to the extent of fifteen versts farther, till it reaches the Kumskoi Kultuk of the Caspian Sea, and at length totally disappears under banks of drift-sand. Nevertheless, the sweet water oozing through the sand in Kultuk is so abundant, that the cattle of the isle have a constant supply.

The river Kuma rises here, in spring, about four arshines, but does not overflow and inundate the low country, in which some traces of its ancient collateral channels are still perceptible. The level steppe, which extends as far as the eye can reach, is in this place upwards of three fathoms higher than the adjacent country. This considerable elevation begins at Terny, and has a steep ridge, which is intersected with several small dells. The elevated steppe is interspersed with numerous antique, vaulted sepulchral hills; and below the village there was formerly an ancient Tartarian house of worship, in a square form, built of bricks, which, however, is now entirely demolished. I also remarked here, that the mortar was mixed with coarsely powdered charcoal and white quicklime; but it was porous, and not so compact as that I had observed at Tzarevy Pody, on the banks of the Akhtouba. This ruin is called Nishnye Madshary, a name which it has in common with the village.

Beyond the Kuma the country is diversified with small hills, and rises with a steep ascent from the adjacent bank: this tract is almost as high as that of the Sarpa; it consists of a loamy soil, without any strata of stone, and its surface is a blackish earth, covered with verdure. Nearly opposite the village, the high country projects in a lofty hill towards the river, and then



then retreats somewhat farther from the stream, towards Volodimerovka; but it progressively becomes higher along the bank, till it communicates with the promontory of the Beshtau. On the principal eminences of this high tract are sepulchral hillocks of various sizes, which probably have served as posts for centinels. The *Rhamnus lycioides*, or Kustovnick, grew here in general with very low and spreading branches; and we also discovered the true *Crambe orientalis*, which is not to be found in the vicinity of the Volga, though that country produces the *Crambe Tatarica*. Besides these we observed the *Statice Coriaria*, or Karamyk, wild thyme, and several very beautiful plants, which were almost indiscernible, being in a great measure parched. In the environs of Usvat were, the *Salvia æthiops*, *Centaurea ficula*, *Physalis alkekengi*, *Solanum nigrum*, *Stramonium*, *Chrysocome biflora*, *Alcea ficifolia*, as well as the *Colchicum*, and in the village itself the *Heliotropium Europæum*, *Zygophyllum*, *Harmala*, and slender *Alhagi*; plants which the cattle never touch. They were numerous, some in blossom, and generally distinguishable by their stalks.

In this country there is abundance of game. The majestic stag descends from the mountains, and the Saiga comes hither from the steppe: there is also a great variety of hares and other small quadrupeds. The *Mus Jaculus* formerly infested this place in such numbers, that they devoured the unripe corn. In autumn, especially, this country abounds with wild-fowl. Bustards, as well as other birds of passage, come hither in numerous flights, and remain till the approach of winter. The noblest of the feathered tribe here is the pheasant; this delicate bird appears first in the forests adjacent to the Kuma, and

afterwards more numerously in the thickets and sedges of the low country. The places overspread with reeds adjacent to the Terek and the Kuban, along the shores of the Caspian Sea, and the whole tract of the Caucasus, may be said to be the native country of the pheasant. As it often happens that these birds impress their footsteps in the thickets which they frequent, they are caught by gins, which are represented in the Vignette No. 5. The gin is fastened to an elastic rod (*a*), which is bent at the lower end; it is likewise tied round a small piece of wood (*b*), which, strained by the rod and snare, presses a stick placed transversely (*cc*) upon a bow fixed in the ground, so that it just keeps it in balance. On this transverse piece of wood several other smaller pieces rest (*c*), placed across the path on which the snare is spread. As soon as the pheasant steps on one of these sticks, the square piece is pressed down by the weight of the bird; the small piece of wood (*b*) gives way; the elastic rod (*a*) springs up, instantly draws the gin around the legs of the bird, and lifts it into the air, so that it cannot possibly disentangle itself.

The inlets of the river contain shads, small carp, pike, and other smaller fish of different kinds: in some lakes of the low country there are small tench, and carouffes, which are beautifully speckled, and very delicious.

Malye Madshary, or, as it has since been called, Kavaskoi Ufat, is, next to Volodimerovka, the first village established on the banks of the Kuma, in this beautiful and fertile country, which only twelve years ago was a desert. The Malo-Rusians, and other wandering hordes, laid the first foundation of a settlement, and submitted to be enrolled as vassals. Attracted by

by the beauty of the place, and the abundance of good arable land and pasturage, several individuals, as well married as single, have gradually settled here; hence the village is now increased to one hundred and sixty farm-houses, and inhabited by six hundred persons, from the age of fifteen to sixty years, who are subject to a poll-tax. Exclusive of these, there are about two hundred unmarried men, who have received permission to work at the fisheries. This village belongs to the Princess VASEMSKOI, who, at the request of the peasants, has appointed a priest of Georgian descent, born at Kislar. She has also caused a small church to be erected of wood, and the villagers, in consequence of their agreeable situation, in a fertile country, are now become peaceable vassals. The village is built in regular streets; the cottages are indeed small, but well constructed of wood, plastered over with clay. A good manor-house, with a garden, affords a convenient resting-place to the traveller, who visits this desert country. At the western part of the village, on a declining promontory, round which the Kuma winds in a considerable angle, the excellent economist of this place, M. TOMASHEFSKY, has cleared the ground of brush-wood and sedge, and has begun to plant a vineyard, orchard, and mulberry-garden, which promise to be very beneficial. This ingenious gentleman is a native of Poland, and has had the superintendence of the village for the last six years. The only vines planted here are those of the Don. They produce black grapes, which ripen early, and, together with the white Kyshmish without stones, are the most useful species of that fruit cultivated in these regions. The vines, without being watered, grow luxuriantly in a clayey soil,

foil, which is only from one to two fathoms above the level of the river; they are allowed to grow in long branches, for the construction of harbours. A tolerable good must had already been pressed from the grapes of this vineyard. The mulberry-trees thrive as quickly as weeds, so that those in the plantations of four years growth have trunks thicker than a man's arm, are a fathom and a half high, and their branches spread to a considerable extent. Peach and plum-trees grow here in the open fields, without being grafted, or laid out in espaliers. In the month of December, they are covered with a little straw, which is removed early in February.

M. Tomasheffky has also made an attempt to cultivate silk. It was intended to devote a particular part of the village to such an establishment for the emigrants from Georgia, who might considerably increase this branch of economy. There could be as much silk produced along the borders of the Terek, the Kuma, and in Taurida, as would supply Russia with a sufficiency for home consumption. It would, however, be absolutely necessary to employ colonists from Asia, Greece, Dalmatia, and Italy; as the Russians can by no means be induced to engage in this profitable branch of industry. All the silk which is now produced on the banks of the Terek, and in Astrakhan, is cultivated by Georgians, Armenians, and a few Kozaks, who have in this respect overcome the popular prejudice.

The principal employment of the Russian peasant, in this country, is agriculture; which is facilitated by the uncommon fertility of the soil. An uncultivated field, covered with a thick turf, is ploughed in spring, sown with millet, and harrowed.

rowed. In the second year, this ground is again broken up with a heavy rake, called Ralo, which is drawn by oxen, as represented in the twelfth Plate, and afterwards sown with wheat. The third year it is sown with rye or barley, which is harrowed in by the Ralo, and the fourth year it is deeply ploughed for winter wheat. After this succession of crops, the soil is allowed to lie fallow for four years, and upwards, till the herbage that overspreads its surface affords sufficient vegetable mould. Wheat yields twelve-fold and upwards, and rye eight-fold on this argillaceous, black soil, which is intermixed with marl. The winter wheat sown in November ripens towards Whitsuntide, and the summer wheat, which is put into the ground as early as February, is ripe by the end of June, or beginning of July. An experiment has been made to cultivate plain barley, and English as well as black oats. The ripe grain is trodden out in the open fields by horses hired of the Tartars, and the straw remains in heaps till the next conflagration of the steppe.

It will not be uninteresting to take a general view of the colonies which have been established in the environs of the Caucasus, since the year 1781, with an intention to people the frontiers, and support the troops stationed there for protection. These new colonies are settled in detached villages, and the colonists have been obliged to build small fortifications, and in several places even to surround their houses with chevaux de frise, for security against the irruptions of the mountain hordes. It is worthy of remark, however, that most of these villages, in consequence of disease, desertion, and other causes, have lost

a considerable number of their original inhabitants. At length they have attained a permanent state of prosperity, which affords them the prospect of an increasing population, while they enjoy perfect security against accidental calamities, except those of war. From the annexed specification, the reader will learn the following particulars relative to these establishments. The first number indicates the year in which the village was built; the second, the original, and the third, the present number of male inhabitants.

I. The following new villages are situated along the banks of the Kuma, beginning below and proceeding towards its source.

Terny or Ternovka, in 1791, on the left bank of the river.

Volodimerovka in 1786 — 36 — on the right bank, belonging to General Savelief;

Kavkaskoi Ufvat, in 1786, — 852 — the property of the Princess Vasemskoi;

Pokoinoi, in 1786, — 1013 — 361;

Bolshye Madshary, in 1786 — 183 — being German colonists, who have separated, and now inhabit the left bank of the river;

Proskovea, in 1785, — 938 — 584 on the right bank;

Privolnoe, or Maslof Kut, in 1785 — 411 — 411;

Nino*, or Frolofskoi Kut, in 1786, — 1233 — 579, among whom there are about one hundred and fifty gypsies.

Novogrigorievkoe, or Fedorovka, in 1781 — 957 — 810;

Otkasnoe, in 1786 — 860 — 302 on the right;

Sloboda Alexandrovka, in 1781 — 448 — 448, on the right, consisting of disbanded soldiers;

* This name was given to the village, by Count PAUL POTESKIN, in honour of NINO, the beautiful daughter of the TZAR HERACLIVS of Georgia.

The village of Alexandrovka, in 1788—180, belonging to Count Voronzov ;

Novofavedennœ, in 1785,—1176—622 ;	} on the left, like the following.
Obilnaya, in 1785—1341—846 ;	
Malaya Podgornaya	
Bolshaya Podgornaya } 1786—1032—733 ;	

Sloboda Alexandria, in 1784—835—654 ;

Sloboda Ivanovka, or Kryukin Brod, in 1791—100, belonging to Count Tchernifhef.

Near the adjacent rivulets, but partly again abandoned.

Naideno,	} on the banks of the Bibala.
Blagodarnaya, in 1787—131—105 ;	
Byeloi rutshai, in 1787—36 ;	
Medveditza, in 1785—1123—767 ;	
Vyfotzkœ, in 1785—935—605 ;	} on the banks of the Tongusly.
Tshernoi Les, in 1789—356—264,	
Novofeltzy, in 1785—1205—789 ;	

Kalinovka, in 1785—1517—999, on an adjacent brook which falls into the Tongusly.

Sabla, in 1788—194—166, on the brook Karamyk ;

Neflobnoi, in 1786—183—118, near the rivulet Solka ;

Ekaterinovka, in 1776—89—on the same brook, belonging to Colonel Rebinder.

II. On the banks of the Kalaus.

Petroffkoe, in 1786—136—96 ;

Maryeno, in 1785—999—630 ;

Nadeshta, in 1785—1698—1163 ;

Sergieffkœ, in 1788—263—244.

III. On the banks of the rivulet Kurai, or Kura.

Kurffkœ,

Kurkskœ, in 1786—261—164 ;

Spaskœ, in 1786—257—87 * ;

Raftavanovka, belonging to a nobleman of the same name ;

Gofudarstvennaya, in 1786—607—312.

IV. On the banks of the rivers Malk and Terek.

Alexandrovka, in 1784—52, belonging to Count Besborodko ;

Pavlodolskoe, in 1784—206—138, on the banks of the Yerashta, a collateral branch of the Terek ;

Pervorodnœ, in 1786—38—38, on the Terek ;

Bliskoi, in 1787—61—43, on the river Malk, where a great number of planks are fawn ;

Prokhladnœ, in 1784—545—308 ;

Soldatskaya Malka, in 1787—274—248.

V. Near the rivulet Tashla, which flows into the Yegorlyk.

Pelagiada, in 1785—1450—865 ;

Mikhailoffskœ, in 1785—1469—964 ;

Donskaya Balka, in 1786—534—300.

M. DERADING, Director of Economy at Astrakhan, presented me with a list which contained an account of the quantity of grain sown, and its produce in these colonies, in the year 1792. It appears that there were sown, 15,000 Russian Tchetverts of rye, 13,000 of wheat, 8400 of barley, 2300 of millet, 14,950 of oats, and 284 of buckwheat. These different species of grain produced, upon an average, 94,400 tchetverts of rye, 86,400 of wheat, 45,544 of barley, 28,300 of millet, 75,700

* The brackish water of the Kurai is considered as extremely unwholesome, and this is the principal cause that the villages in its vicinity have suffered so much from disease. The wild fruits may also have contributed to produce disorders.

of oats, and 1200 of buckwheat ; to which should be added 306 tchetverts of peas, that produced 1538 ; 790 tchetverts of hemp, that yielded 3140 ; and 757 tchetverts of lintseed, which were productive of 2160.

It is evident from this statement, that the inhabitants of the villages recently established along the frontiers of the Caucasus, cultivate grain sufficient for the support of the troops quartered in this region. Nevertheless, the victualling commissaries of the army have this year permitted, for the first time, 15,000 tchetverts of grain to be purchased at the rate of two rubles per tchetvert ; but hitherto the Crown has been obliged to procure grain from the district of Kharkov, and other distant governments, at the rate of four rubles and a half the tchetvert. By such abuses, however, the peasant has been much discouraged in his agricultural pursuits ; because he is at a loss where to find a market for his grain, particularly for rye. The colonels of cavalry purchase oats at the rate of a ruble, and a ruble and a half the tchetvert. Wheat amply repays the expences of conveying it to the adjacent towns, and even as far as Astrakhan. Nay, the Greek merchants of Taganrog began, in the year 1793, to purchase the wheat of this country at two rubles and a half, and conveyed it to their harbour, for exportation, at a ruble and a half the tchetvert. Perhaps a better channel might be found for the exportation of the agricultural produce of this country, if enterprising merchants would erect magazines for wheat, on the banks of the Kuban, in order to transport this valuable grain during the spring tides, by flat-bottomed vessels, to the isle of Taman, and the village of Kertsh. Every reflecting person will, from the account here given, easily perceive the

great importance of agriculture in this country, and how much it deserves to be encouraged, especially for the support of troops stationed along the Lines of the Caucasus. Besides, as several peasants have begun to plant vineyards, on account of the indifferent sale of the corn, which fills their granaries, it is probable that many useful hands will be withdrawn from the plough. It would, however, be more beneficial to the State, if the boors would direct their attention to the cultivation of mulberry trees, and the consequent rearing of filkworms; an employment which is perfectly consistent with agriculture, and promises many advantages to the husbandman. The manner of rearing mulberry trees from seed is very simple, as it requires nothing more than to cover a rough cord of hemp with bruised ripe mulberries, and to bury them, in small furrows made in a moist soil. From these seeds the young plants spring up so quickly and abundantly, that in the second year they are fit to be transplanted into trenches somewhat deeper, at a distance from each other : and they thrive in almost every kind of soil.

On the 4th of September, in the afternoon, I left Usvat, and continued my journey. The border of the high steppe is covered with several very large, and small, sepulchral hillocks, both above and below the village. A verst and a half beyond Usvat, there are similar monuments on the spot where the Tartar-house of prayer beforementioned was formerly situated.

The steppe perceptibly rises towards the Sukhaya, or dry Bibala, pronounced by the Russians, Buivalla. This saline ditch was at present in a dry state ; it extends ten versts from the steppe,

steppe, and carries off the snow-water in spring. In the higher parts of the steppe, we found wells made by the Kalmuks. At this place there formerly stood two Tartar-houses of prayer, which the new colonists have entirely demolished, and carried off the bricks. The canal above described is eight versts distant from Usvat, and seven from Pokoinoi Selo, where we fixed our quarters for the night: it extends to the Kuma, and formerly was the boundary between these two villages. — Beyond the Kuma, the high country was uniformly more elevated than the steppe on this side of the river: as we approached Byvalla, the heights considerably declined along a collateral branch of that river, above Pokoinoi: the country was intersected by trenches formed by the rain-water, and the steppe gradually declined towards the meadows.

Pokoinoi is a large parochial village, which has been peopled by Russian colonists from several parts of the Empire: their original number amounted to 1100 males, but it is now reduced to three hundred and sixty-one. In consequence of the dryness of the adjacent steppe, and the increasing number of mountain mice which incline to burrow in a dry soil, and are extremely pernicious to grain, most of the peasants have been induced to cultivate the lands beyond their appointed limits. These lands lie principally beyond the Mokraya Byvalla, on the low and fertile plain of the great Madzhary; and that arable tract which was formerly given to a German colony, is now uninhabited. — Near Pokoinoi, on the river Kuma, there is a wretched floating mill built on hollow beams, and belonging to a company of five peasants: there is also a bridge equally indifferent. In the low bushy country, on the opposite side of

the river, we saw several wild vines with ripe grapes, the water elder, and great numbers of the *Dypsacus sylvestris*, but which were now withered. The vine grows along the surface of the ground, and also clings to trees and shrubs : it frequently has trunks as thick as a man's arm, and often shoots out into straight and slender branches above ten fathoms long. In this place the current of the Kuma, though rapid, is very muddy and turbid ; and its collateral branch runs close to the high country, on the opposite side. Near Ufvat, however, the river becomes more limpid, in consequence of passing over rushes, where it deposits its mire.

We left Privolnoë on the 5th of September, and soon arrived at an extensive low country, covered with reeds, but now in a dry state. It is called Mokraya, or the wet Byvalla, and beyond the road it forms a marshy lake, along the right bank of which there are several extensive spots covered with a white saline efflorescence. The source of this lake is at a considerable distance towards the North, and about seven versts from its origin it is skirted with brushwood. Towards the lower part it becomes dry in summer, and the water of its pools then acquires a brackish and bitter taste. This marshy lake, which lies at an equal distance of sixty versts from the Kuma and the fortress of Severnoi, contains sweet water at the upper part where springs flow into it ; but that in its lower part is bitter and saline. The shores of this extensive lake are variegated with sedgy marshes, numerous meadows, and arable land of great fertility.

We travelled three versts and a half over a valley richly wooded and adorned with numerous vines ; we then crossed

several ditches of water, passed a few sepulchral hillocks, and ascended the high steppe, which runs in an obtuse angle between the low tracts of the Byvalla and Kuma. Here the antique Tartar buildings that still remain, present themselves to the eye, and are known by the names of Bolshye or Verkhnie, the greater or upper Madshary.

In the year 1780, the number of these buildings, part of which were standing entire, and others fallen to ruin, amounted to thirty two; and we learned that six edifices similar to towers were formerly to be seen in this place. Since villages and forts have been established in this neighbourhood, the excellent bricks of those buildings have been removed, inasmuch that scarcely a trace of them remains. According to the best opinion that can be formed, from the vestiges of these ruins and their foundations, they have formerly stood in rows; a circumstance that has induced the ignorant to suppose they were the streets of a large town. But, upon close investigation, it appears that this place was a famous cemetery appropriated to persons of distinction; for similar vestiges are discoverable in the whole country of the Kuma, in all directions, and on every eminence of both its banks, especially on the right or southern side, which is as it were covered with sepulchral hills. This proves the partiality of the ancient wandering tribes to this country, and even in modern times the Kalmuks annually drive their cattle hither for winter pasturage.

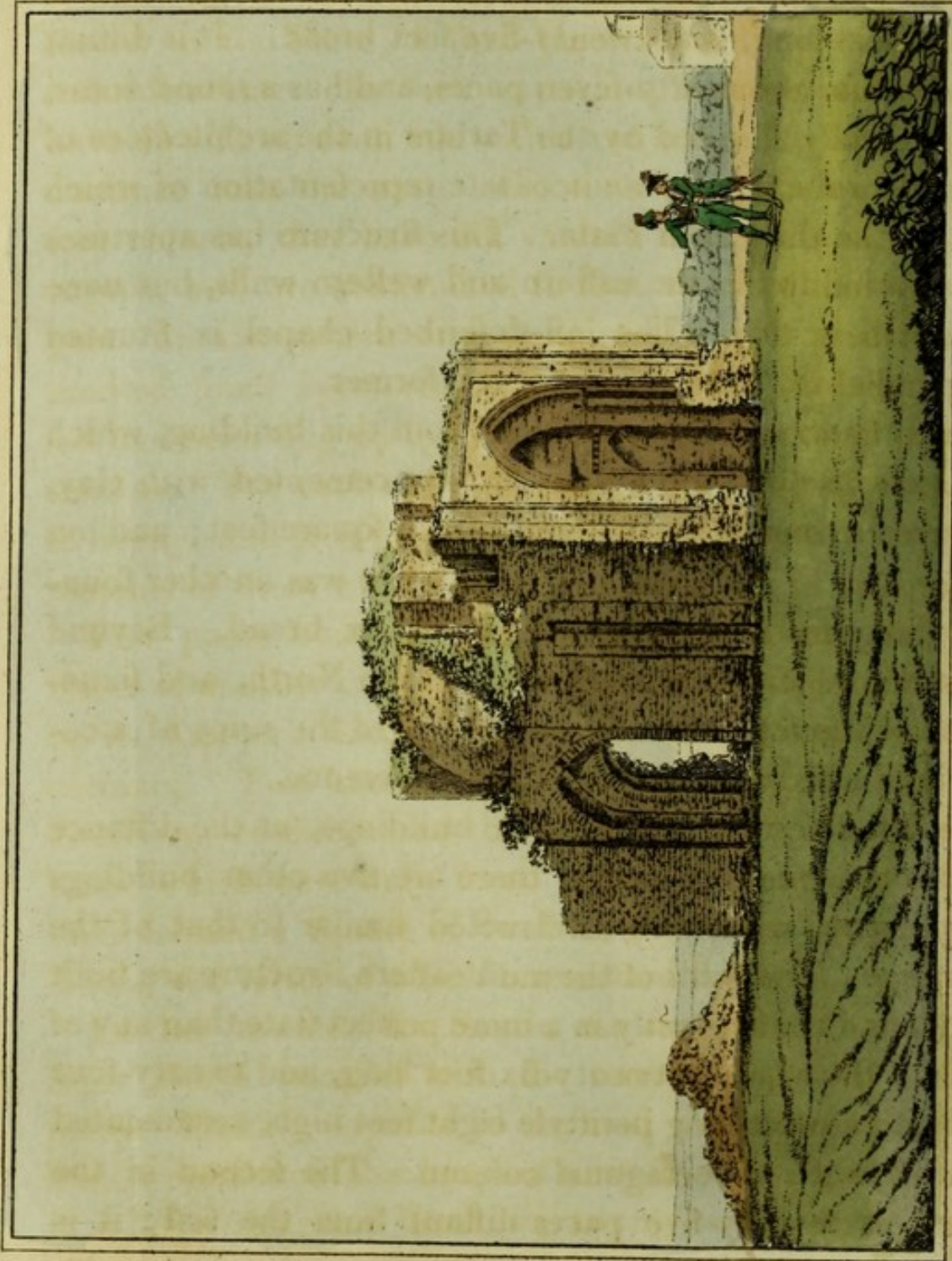
The buildings which remain entire, are only sepulchral mosques of a Mahometan nation, perhaps of Tartar origin. And if we were to judge merely from the traditional name of Madshar, given to this place, it probably has been a former residence

residence of the Hungarians or Kumanians. This conjecture may likewise be applied to those ruins of brick buildings which are on the high mountains near the great Dshindshik, by the Circassians denominated Madshar Yuna, or houses of the Madsharians. There is no foundation for believing what is related of this supposed city, that its inhabitants have been expelled by great numbers of the large tarantula, or *Phalangium araneodes*, from which traditionary account the rivulet Byvalla has received its name; *By*, being the Tartar word for the tarantula, and *valla*, signifying bad or evil. I have never considered this country as the native soil of that insect; for, notwithstanding my diligent researches, I have not been able to discover a single tarantula in those regions.

Four chapels, or mausolea, of which a representation is given in the twelfth plate, are in a line from East to West, on the high steppe; and there have been three principal rows, besides the sepulchral hillocks, tomb-stones and other ruins that lie scattered around, without any apparent order.

The building, situated two hundred fathoms from the banks of the Kuma, and about two hundred and fifty distant from the Byvalla, is covered with the climbing vine, and differs from the three others in architecture, size, and the form of its cupola, as it is faithfully represented in the Vignette No. 6. This structure is in a state of decay, both on its projecting eastern front, and the same side of its cupola; and as its walls have been cemented with clay instead of lime, which was only used for the foundation, it will probably soon become a heap of ruins. It is thirty-six English feet long, and twenty-five broad. On its eastern side, there is a heap of rubbish, and a foundation





foundation probably of a tower, or *Misger*, in the same line with the portico, which, in all these buildings, is facing the South. A similar foundation of sixteen feet square is situated in the middle, between this and another building, which is thirty-five feet long, and twenty-five feet broad. It is distant from the former about fifty-seven paces, and has a round dome, a form generally adopted by the Tartars in the architecture of their sepulchral chapels; an accurate representation of which is given in the thirteenth Plate. This structure has apertures instead of windows in the eastern and western walls, but none on its northern side. The last-described chapel is situated nearly parallel to, and in front of the former.

At the distance of eighteen paces from this building, which is still entire, though the walls are only cemented with clay, we observed a foundation of about fifteen square feet; and ten paces farther, in the same direction, there was another foundation, thirty-six feet long, and twenty-six broad. Beyond these, about ninety-two paces towards the North, and somewhat out of the regular line, we discovered the ruins of a conical structure sixty-one paces in circumference.

In the first described row of these buildings, at the distance of exactly one hundred paces, there are two other buildings perfectly entire, which are constructed similar to that of the second range. The walls of the most eastern structure are built with lime, and consequently in a more perfect state than any of the others: the whole is twenty-six feet long, and twenty-four broad; with a projecting peristyle eight feet high, ornamented on each side with an octagonal column. The second in the same line, is seventy-five paces distant from the first: it is
twenty-

twenty-eight feet in the cube, with a vestibule eight feet high, adorned with two octagonal columns beside the peristyle, and is behind twenty-six feet broad.

The exterior form of these buildings may be distinctly observed in the Plate; I shall therefore only speak of their interior structure. In their capacious southern entrance, they have an aisle on each side with a vaulted niche, and a narrower entrance into the nave. On three of the sides, and in the four corners, they have flat vaulted niches which support the cupola, and are constructed so that the whole forms an octagon. In the eastern and some of the western niches, I remarked small apertures as substitutes for windows; and the soil had been dug up in all the niches, by persons in search of treasure. The vaults of those built with clay and bricks begin to decay, and it is probable that in a few years scarcely any remains of them will be seen.

Five paces from the last-mentioned building, we observed traces of another circular structure, with two projecting walls on its southern side, which were originally designed for the entrance. Two hundred and ten paces distant, in a western direction, we discovered the foundations of two square structures, which were only seven paces from each other: one of these formed a square of twelve, and the other of eight arshines, the latter of which terminated this line.

Farther towards the South, we met with another line of ruins almost parallel with the former, and distant forty-six paces. Exactly opposite to the most western of the preceding lines, we observed some heaps of rubbish, which were the remains of a large octagonal structure, twenty-seven feet in diameter.

Eight

Eight paces from this spot, and in a more eastern direction, we saw another round but smaller heap of bricks, scarcely distinguishable, while towards the West we found several heaps of ruins, from which a quantity of bricks had been dug, and were left standing in piles. The largest building in this row is three hundred paces westward of the first pile of fragments; among the oblong and square bricks of which we discovered several blue and greenish glazed fragments. In imitation of these ancient Tartar bricks, there are to this day a similar kind used for chamber ovens, which are glazed on one side, and made at Tsherkask, on the banks of the Don.

The third line, which has not a single building entire, is situated on the opposite side, at a considerable distance, and nearer the border of the sedgey low country, that is covered with reeds, and traversed by the Byvalla. At this place we observed the foundations of square buildings, generally two together; and we sometimes saw square heaps of large bricks, and ruins which appeared to have belonged to the vaulted sepulchral hillocks underneath. Two of these very large hillocks are towards the N. W. of the buildings which remain standing, and one of which is surrounded by a flat rampart of earth, without a fosse. Farther to the N. E., and adjacent to the valley, we saw two similar heaps of ruins, environed by a common mound, which extended towards the West, in the form of a court-yard. We often met with similar enclosures near the principal tombs, on the banks of the Volga; and I have not the least doubt that all these remains of antiquity formerly belonged to the same horde. Besides these, there are two other

sepulchral hillocks, as well as two square foundations situated collaterally, and a variety of ruins scattered around.

On the plain, between the buildings and the ruins, we also observed several excavated tomb-stones, from six to eight feet long, and of an angular form. They were hewn out of conglomerate masses of lime or sand-stone, similar to those found on the tombs of the Greeks and Jews, and were placed horizontally, without any inscription.

Towards the South, there were likewise scattered several sepulchral hills, especially some of a large size, situated a few versts distant from the buildings before described, opposite the village Proskovea, beyond the Kuma. These monuments are near the place where the German colonists had formerly settled, but there is now no building to be seen, except a redoubt lately erected, and now abandoned.

We also observed on the plain which contained the two large monuments abovementioned, some stunted mulberry-trees, or the *Morus tatarica*, of the wild indigenous species; and the vine, which crept along the sides of several cavities. We also frequently met with the large sea colewort, or *Crambe orientalis*, and the gigantic plants of the *Zygophyllum*, and *Statice Coriaria*, which flourished in every direction. The declivity towards the low country of the Kuma, is in some places covered with the vine like a carpet; and in spots adorned with wood, it extended its beautiful branches and tendrils from one tree to another.

The soil, in the neighbourhood of Madshary, is richly impregnated with nitre, to a considerable extent. The village Proskovea is situated on the opposite side, at some distance from

the Kuma, on the border of a long and narrow lake in the large valley, which appears to have been the ancient bed of a river, and lies contiguous to the high country. But the village on this side, appropriated to the German colonists who were sent from the government of Saratof, is entirely abandoned. These settlers lived here upwards of a twelve-month in subterraneous huts; but from the unwholesomeness of their situation they lost part of their number, which originally amounted to one hundred and eighty-three persons.

The steppe continued visibly to rise, and after a journey of fifteen versts, we arrived at the rivulet called Dongusly, or hog's water, which was entirely dry, except some deep marshes. The Russian peasants have changed the name of this rivulet to Tomuslovka. It rises at the foot of the mountainous country which extends towards the West into the steppe, between the fort of Alexandrovkaya and Severnaya. This tract is destitute of wood, except its upper part, where the trees are but thinly scattered, and of an inconsiderable size. Towards the source of the Dongusly there are horizontal strata of lime-stone, similar to that used at Madshary for tomb-stones. A short distance from its confluence with the Kuma, M. BOLDYREFSKY has begun to build a small village on his estate, and has collected a number of stragglers for that purpose. — Seven versts from Tomuslovka, we arrived at one of the windings of the Kuma, which enclosed an extremely fertile plain called Mafslor-Kuut. The large parochial village of Privolnoë is built on this beautiful plain which borders the left bank of the Kuma. About half way to the village, the rising ground changes

to a black and fertile soil ; and on the steppe, which was burnt to a considerable extent, we saw a number of *Colchicum autumnale* in blossom.

In the Kumanian vallies of this rich woody country, the peasants dig up a quantity of wild madder. Great fields of that root might be cultivated with facility in all the adjacent vallies, by transplanting it at proper distances. Several peasants in these regions, part of whom are Russians, and others Malo-Russians, have attempted, near their farms, to cultivate the vine and establish orchards in the valley, beyond the river. The fertility of the soil has improved the situation of these settlers ; but their general complaint is, that they have no market for their abundant grain. — The late Governor, Count PAUL POTECHKIN, formerly kept his studs near this village, and employed the boors in haymaking and other branches of husbandry. — They have two floating mills on the Kuma, and a decent church. Besides, the abovementioned vallies produce several mulberry-trees, wild hops, and vines which form the most delightful natural arbours. The *Acer tataricum*, and *Eupatorium cannabinum*, presented themselves to my view for the first time near the Kuma.

September 5th. Eight versts farther, between the village Privolnoe and Frolof-Kuut, or Nino, the latter of which is built in another angle formed by the Kuma, the steppe rises into a bank, which in a striking manner exhibits traces of the high shore of the ancient Sea. This elevated ground forms the bank of the river, and is upwards of two fathoms above its current : the *Colchicum*, which we found growing throughout the

the high steppe, was not to be seen on this bank. The uniform surface of the steppe became imperceptibly higher, so that near the village Koffoi-brod, situated some versts farther, the bank of the Kuma was three fathoms high.—From Madshary we first descried the snowy mountains of the Caucasus. During the whole of this day's journey they appeared particularly distinct to us, on account of the serenity of the air, and exhibited in their train a most magnificent spectacle. Besides the lofty and colossal Elburus*, which towered above all the others, and as it were guarded the whole chain on its western extremity, there were four principal groups crowned with snow, which were particularly conspicuous by their irregular summits. The black mountains, or, as they are usually called here, Tshernye Gory, appeared at this distance like a regular wall, which connected the snowy mountains that rose above it, while it formed their basis. The height of these black mountains is apparently equal to that of the Beshtau, though the latter is one hundred and fifty versts distant from the former; and that part of the Elburus which is covered with snow, appears to be above double the height of the Beshtau, which, however, is much nearer the place whence we viewed those vast piles. The other groups of these snowy mountains appear to the eye one-third lower than the Elburus: the most conspicuous are the

* I am not certain what nation has given this mountain the name of Elbrus, or Elburus, which perhaps is not inferior to *Mont Blanc*. The Circassians call it Oshha makhua, or the happy mount; and the Akases, Orfi Ipgub. They consider it as the residence of the king of the hobgoblins, whom they call Dshin-Padishah. In the vicissitudes of an unfortunate war, this mountain is an asylum to those nations.

broken mounts near the rise of the Aredon, and the summits of Kafibek beyond the source of the Terek. The usual road to Georgia passes near the last-mentioned river.

Near Mafsloff-Kuut there was formerly a Tartar chapel, with a cemetery, of which scarcely a vestige remains. I have a plan of it, which was made about ten years ago, by Mr. DIGBY, an architect who resides at Astrakhan. The flat vault of the cemetery is remarkable: its construction and solidity excited the admiration of this gentleman. I have annexed an engraving of this plan, because the vault bears a complete resemblance to those I formerly remarked, on the banks of the Akhtouba.

The distance from Privolnœ to Novo-Grigoriefskoi, or Feoderovka, is fifteen versts: the latter is a large parochial village, chiefly inhabited by Malo-Russians. Beyond this village we crossed the small rivulet Karamyk, which runs between steep banks, stratified with clay and mould. At this place, the base of the mountain attracts the attention of the observer, while its borders gradually rise as they extend along the banks of the Karamyk. The distance between Feoderovka and the parochial village Koffoi-brod, or Novo-Savedennœ is computed to be twenty-four versts. We observed a considerable number of sepulchral hillocks on the steppe which borders the valley. In the vicinity of the village of Karamyk, we crossed the Sukhoi Karamyk, which was then dry; and after travelling twenty-five versts, and passing the lower village Podgornœ, we arrived at a second village of the same name. We here crossed the Kuma, by a miserable bridge. The river is but a small stream at this place;

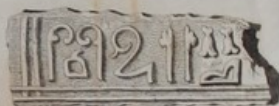
Plan, Elevation, and Section of a Sepulchral Monument, of brick-work, formerly existing at Mupstlof-Kant, on the River Rithkuma, near Magiur, at the foot of Mount Caucasus.

Fragment in sand stone, of a Sepulchral Inscription cut in bas-relief, and found in a vault of the monument.

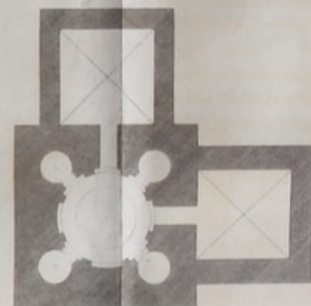
Section of the Sepulchral monument.



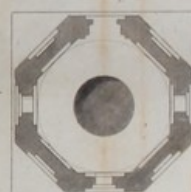
Elevation.



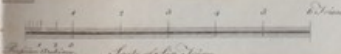
Under Ground Plan.



Plan above Ground.



Section of the Under Ground part.



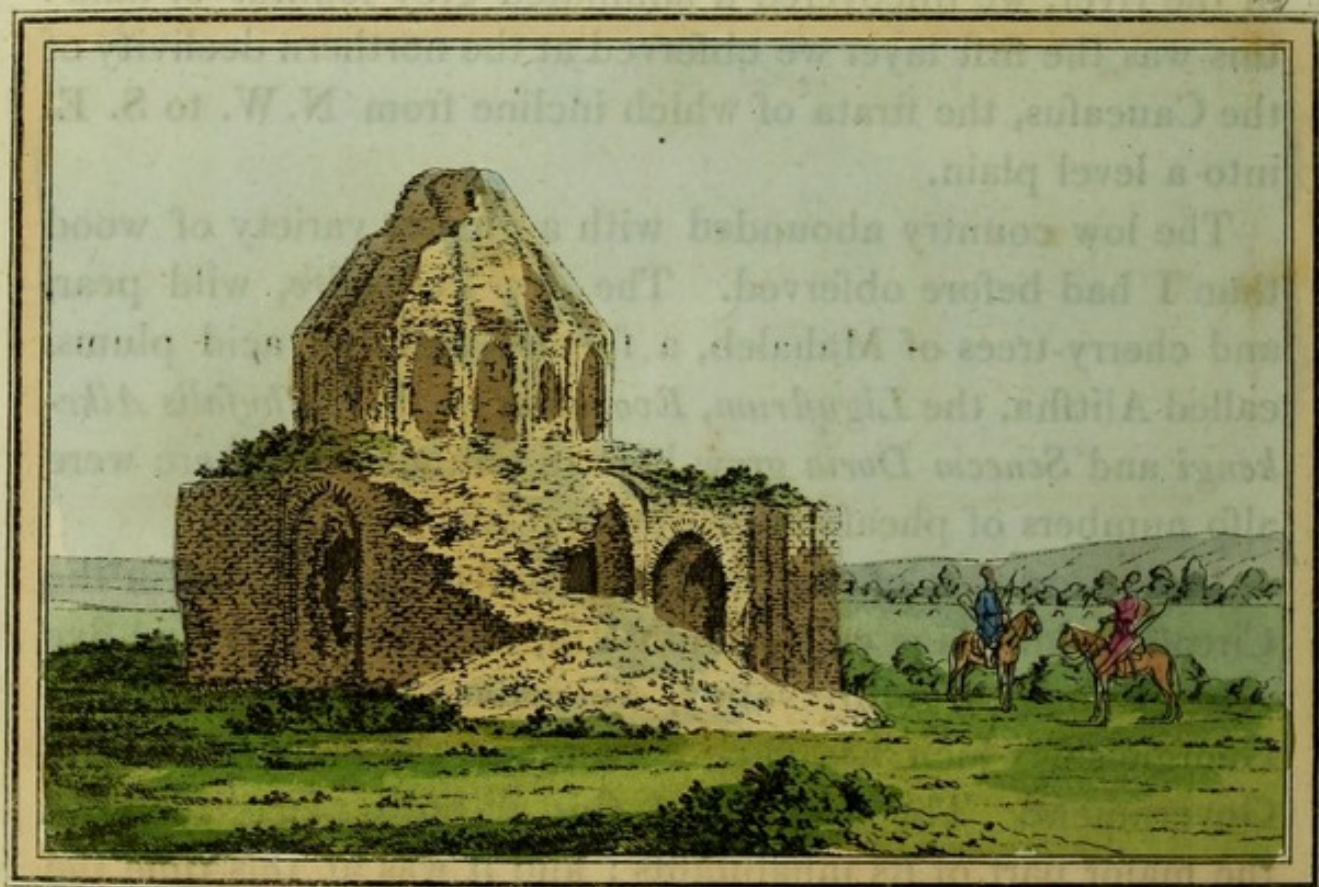
place; and it winds with a serpentine course through an extensive and woody valley, in the lower part of which the Podkuma, with a stronger current of water, joins the former in the vicinity of the abovementioned Podgornœ.

At this place the upper bank of the Kuma is four fathoms high, and consists of a sandy marl, below which, in the bed of the river, we discovered a laminated grey schistus of sand: this was the first layer we observed at the northern declivity of the Caucasus, the strata of which incline from N. W. to S. E. into a level plain.

The low country abounded with a greater variety of wood than I had before observed. The *Acer campestre*, wild pear, and cherry-trees of Mahaleb, a species of small acid plums, called Alitsha, the *Ligustrum*, *Evonymus grandis*, *Physalis Alkekengi* and *Senecio Doria* grew here in abundance: there were also numbers of pheasants, hares, and roebucks.

In the evening of this day, we crossed the Kuma, in the Circassian language called Gum-Ysh, and after travelling five versts through a bushy valley, we arrived at the fortress of Georgiefsk, which has since been made the chief seat of the Government. The garrison of this ill-built place, includes the major part of its inhabitants; and it was at this time the residence of the Governor and Commandant General of the army of the Caucasus. The happiness I experienced in becoming acquainted with the General of Infantry IVAN VASSILIEVITSH GUDOVITSH, a man equally estimable for his military talents, politeness, knowledge, and affability, made me the more regret that I had arrived in this remarkable region

at so late a season of the year. Here, though I had only an opportunity to cast a slight glance on the border of the Caucasus, I perceived that much important information might be acquired on subjects of topography, mineralogy, and botany, notwithstanding the persevering researches of so acute an observer as the late Professor GUELLENSTAEDT.





Observations made during a Journey along the Caucasus.

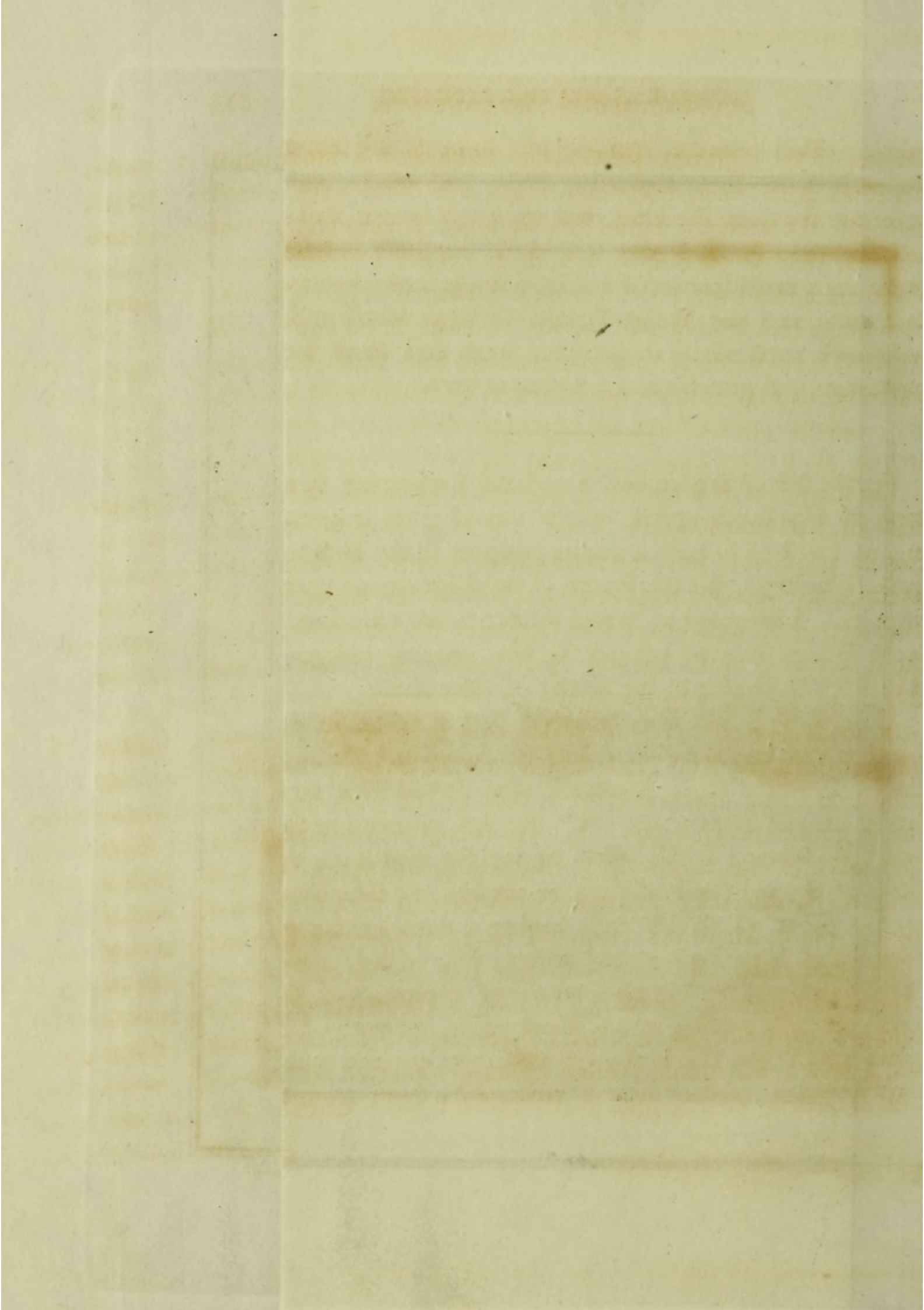
GEORGIEFSK is situated near the steep verge of a woody valley of the Podkuma, or, as the Circassians commonly call it, the Gum. The perpendicular height of this steep country is eleven fathoms. The fortifications on the land side consist of three whole and a semi redoubt, while on the side towards the shore, it is defended by a parapet and batteries. It has a church; but, except the residence of the Governor, there is scarcely a decent and tenantable habitation. Happily for the inhabitants, the winter is as mild here as in the mountains of Crimea; an advantage which this place enjoys from its situation in the angle of the stratified high mountains that extend towards

Severnoi, and protect Georgiefsk against the North wind. Notwithstanding this protection, the turbid waters of the Podkuma, the sudden vicissitudes of heat and cold, especially the bleak night-winds from the lofty mountains, the want of precaution in the Russian soldier to preserve himself from those nocturnal blasts, and the frequent exhalations and fogs which arise from the moist and low country, all contribute to render this place extremely unwholesome; so that intermittent and bilious fevers are endemic and very obstinate.

On the day when we arrived at Georgiefsk, the ridge of the black mountain along the Caucasus was covered with new fallen snow, which, however, melted in a few days. Some snow fell at the same time on the mountains of Taurida, which also soon disappeared. From Georgiefsk we had a magnificent view of the Caucasian mountains, in their whole extent from the Caspian to the Black Sea. The exact representation of this prospect in Plate 15, which doubtless will be a gratification to those who wish to obtain a knowledge of the situation of these mountains, was taken from the bastion of the fortress adjacent to the bank of the Podkuma, towards the South. From this high bank the eye commands the whole low country on the opposite side, as well as the open and projecting plain, which, as it extends to the foot of the principal mountains, renders the view still more majestic.

The country in the environs of Georgiefsk consists of arable land of an excellent quality, meadows, pastures, fire-wood, and plenty of game: the whole tract from this place to the mountains, bounded by the banks of the Kuban and the Kalaus, has every requisite for the subsistence of a considerable population.





lation. This country, particularly towards the mountains, abounds with deer, roebucks, foxes, and wild cats, which resemble the domestic kind, but are much larger, and of two colours, reddish, and grey with dark streaks. Besides these there are a small species of wolves, a few jackalls, hares, mountain mice, and the *Spalax Typhle*, or large blind mole. Of wild-fowl, particularly in autumn, large and small bustards, partridges and pheasants, are common here.

On the 9th of September, I undertook a journey to the fortrefs of Constantinogorsk, which was of great importance to me, as I wished to have a nearer prospect of the Beshtau, and at the same time visit the source of the sulphureous bath in its vicinity. I proposed to travel farther to the excellent acidulated springs situated beyond the line, near the villages of the Abassines belonging to the family of Dshentimir.

From Georgiefsk, we proceeded over a rising fertile plain covered with excellent grass, and continued our journey along the banks of the rapid Podkuma that flowed with an undulating current down to the left. We first travelled to the West and S.W. leaving Lyffie Gora, or the fox mountain, which is situated beyond the Podkuma on our left; we then proceeded by the point where the river makes a considerable winding round the steep and woody western side of that mountain. About half way on our road we found a picquet of Kozaks; and gradually turning in a S.W. direction, we reached a rising plain which was thinly though uniformly covered with wood and spreading plants, such as indicated a more mountainous country

country and a colder climate. Here we attained the extensive, level base, or what may be termed the more elevated and common foundation of the high promontory called Beshtau, and its collateral mountains. In this region we found numbers of the *Amygdalus nana* with remarkably large fruit, the *Rosa pimpinellifolia*, *Sambucus Ebulus*, *Cornus sanguinea*, and various wild fruit trees with an intermixture of common forest trees. Among other herbs we observed a great profusion of the *Senecio Doria*, and various species of the burdock and thistle.

We now passed the very extensive woody base of the mountain called Metshuka, which rose on our left, and from which we could distinctly see the hillock of sand-stone, whence the warm sulphureous bath takes its source. To the right, we left what is called the mountain of iron, which forms the extreme point of land near the Kuma, the steep and rocky mountain of Serpents, and the Beshtau itself. The base of the Beshtau, which is situated between the two last-mentioned mountains, and is tolerably level, is intersected by a deep, broad, and woody dale, in which the springs, that flow from the northern and eastern parts of the mountain, form a rivulet called Shemuka that runs towards the Podkuma. Among others a warm mineral spring is said to arise here. The level base of the mountains very gradually declines towards the Podkuma, which is five versts distant from the Beshtau. On the bank of the river is built the fortress of Constantinogorsk, situated about forty versts distant from Georgiefsk. It is one of the most important posts on the whole line of the Caucasus, and was built to restrain the incursions of the Circassians, Abassines, and Kunder Tartars. We arrived there about two o'clock in the afternoon,

afternoon, and found a garrison consisting of a battalion of chasseurs, and a troop of dragoons.

In this place we met with a very hospitable reception, in consequence of orders given by the commanding General ; and the same afternoon we made an excursion in a coach to the sulphureous bath, five versts distant to the N. E. of the fort. As we proposed to proceed on the following day to the acidulated springs, a strong detachment of chasseurs and dragoons was sent before us to take post at that place.

Early on the 10th we set out for the mineral spring, escorted by a detachment of dragoons of the regiment of Astrakhan, and a troop of Kozaks.

We proceeded along the banks of the Podkuma towards the S. W., first over a level country where we observed much arable and meadow land ; and on the height were a few isolated stone monuments of the Circassians and Tartars transplanted hither from the Kuban. We passed the rivulet Psiptza which issues from the Beshtau, then crossed the Gurmik, and two versts farther the Effentzuk, all on the left side of the Podkuma. The country on the opposite side now became progressively higher and more hilly, and beyond the Effentzuk it also rose gradually and was more mountainous. White mountains of a compact and calcareous nature, without any remarkable petrifications, environed the beautiful valley of the Podkuma, which is adorned with trees abounding with young twigs : these, in some places, were so closely intermingled in thickets as to render the road narrow and almost impassable. The road extended towards the South, along the bank of the river, and near the base of the mountains. On the steep sides of the calcareous hills, there grew numbers of barberry, cornel,
VOL. I. U U cherry

cherry trees, and various shrubs. If the shady clefts I discovered the beautiful *Veronica orientalis* * in full blossom at this late season. We saw several tombs of the Abassines and Circassians, on eminences along the border of the low country : they were formed of stone, ornamentally disposed either like a cube or a hollow square, and generally had at each corner a large post adorned on the top with a head.

Before we crossed the Podkuma, and about twenty-four versts from Constantinogorsk, near the road which runs along the edge of this low country, we found a bed of white limestone consisting entirely of lamina, and polished fragments in the form of lentils, which readily crumbled between the fingers. This stratum appeared like a garland, which at first was parallel with the road, about five or six fathoms above the valley, but progressively exhibited irregular and perpendicular rocks, above ten fathoms high. It obviously shews traces that it had formerly been many fathoms higher, but its breadth cannot be easily ascertained.

On examining this grey stratum of limestone, we perceived that from the Podkuma towards the Kuma it gradually formed a thick horizontal layer of a yellow and grey sandy consistence, and declined in a still greater degree towards the latter river, till it became even with the base of the mountains.

We here crossed the Podkuma, that flowed with a rapid current over an uniform stratum of limestone ; and the water was so deep, that it reached to the bellies of our horses. On the other side, where a small brook falls into this river, we came to an elevated plain, which forms the foot of the mountains.

* *Veronica erecta*, *Blattariae facie* Buxbaum. Centur. plant. 1. t. 35.

On this plain we saw several villages of the Abassines which belong to the family of Dshentemir: it is besides remarkable for an old, extensive, intrenched camp, probably made by the Tartars. This entrenchment is denoted by the letter F in the 16th plate, which represents the country adjacent to the acidulated spring. I have purposely named this excellent fountain, Alexander's well, in honour of the promising young Prince of that name. The entrenchment incloses a great part of the plain; it terminates on one side at the steep bank of the Podkuma, and on the other side it is bounded towards the S.W. by the rivulet Nartzan. This fortification contains a number of sepulchral hillocks, which probably have served as stations for centinels.

On the right, or towards the West, at a considerable distance, we saw a remarkably high rock, in a large valley environed by mountains: it is called by the natives Burg-uffan, and is represented in the Vignette No. 8.—The steep sides of this rock, which we could ascend only by some rugged paths, their slopes, which were similar to terraces, the ditches, sepulchres, and fragments of earthen ware found on its level summit, but still more the tradition of the neighbouring inhabitants, gave rise to a conjecture that this natural fortification was formerly possessed by an isolated colony of Franks, or other Europeans. Perhaps these colonists were Venetians, or Genoese, who had made choice of this spot, on account of its advantageous situation for their personal safety, and the protection of their trade. I consider these slopes or terraces, which are frequently observed on the upper part of the mountains of this country, as natural productions; although several well-informed engi-

neers have supposed them to be the work of art. In my opinion, they have originated from the destruction of successive horizontal strata, and other natural causes.

The villages of the Abassines in this country resemble those of the Circassians in their structure, and internal arrangement; they have, besides the necessary rooms for the family, separate apartments for visitors, and, instead of stoves, they construct chimneys of wicker work, plastered over with clay. The houses of the former differ from those of the latter only in this circumstance, that they are neither disposed in rows, built in squares or rondels, or inclosed within a common yard, but are scattered singly, have a small yard, and are secured by strong rails surrounding the whole premises. The roofs of their houses are slightly built of rafters, covered with herbs and long stalks of plants: the couch or sofa is a sort of divan, made of wood and placed to the left, on entering a room; it is covered with felts and bolsters. On the walls of the cabin are suspended furs, and other articles of dress, arms, and variegated straw mats of exquisite workmanship. Under the roof there hangs in bundles their winter store, consisting chiefly of Indian corn. Within the premises, or in the yards belonging to their houses, they cultivate gourds, and a few other culinary vegetables. Their poultry and bees are managed similar to those of the Circassians. Their mode of dress also, both men and women, perfectly resemble the Circassians.—I propose to mention the particulars relative to their tribes, in a subsequent part of this volume.

The rivulet Nartzan, towards the source of which we now ascended for several versts, proceeds with a rapid current and
some

some curious windings, from a valley situated at the foot of rising mountains of lime-stone. This dale is confined between two high ridges, and fronted by a third, which is still higher. Around the latter, the three principal springs of the Nartzan, the Khofada and the Elkoshu, run in a serpentine direction from their sources, and re-unite immediately below the mineral spring. The verdant mountains, though very steep, are here and there wreathed with rocky terraces, and particularly on their summits. The most lofty hills have a chain of communication by smaller ridges; and behind them are eminences still higher, which re-unite towards the South with the calcareous mountains and those of schistus; but they are intersected by the valley of the river Malk, and the rivulets which contribute to its formation.

The mineral spring of Alexandrof, in the Abassine and Circassian dialects called Nar-Tzana, that is, drink of the giants, or hobgoblins; in Tartar, Atshe-Su, or acidulated water, is situated at the distance of four versts from the Abassine villages, and five from the crossing of the Podkuma, as represented in the sixteenth Plate. Here the road separates, and leads towards the Kuban, over high mountains, and a small marshy plain, which occupies the angle between the rivulets Khofada and Elkoshu. The mineral spring beforementioned is separated from its two collateral mountains, and also from the more considerable, though flat mountain, situated immediately before the spring in the dale, by those rivulets which run in various meanders through its vicinity, but particularly the Khofada, which extends more towards the East. The narrow vallies from which the abovementioned rivulets flow in deep channels,

cut

cut through a firm bed of lime-stone, intersect this mountain on both sides, and almost entirely surround it. The small and well-supplied brook which forms the spring of mineral water A, again unites, after a serpentine course of only sixty feet, with the rivulet Khofada, which runs close to the former, but in a more eastern direction; and into which, immediately after, falls that of Elkofhu, towards the West. These three rivulets conjointly produce that which is called, from the middle or mineral spring, by the name of Nartzan, or Nar-Tzana.

In the marshy plain, between the mineral spring and the nearest windings of the two rivulets, there issue ferruginous springs, which, in various places, deposit ochre, and where we observed a thin variegated pellicle floating on the water. It would doubtless be worth the trouble of analyzing these veins of martial water: which, if collected and purified, would perhaps afford a very salutary mineral spring of a different kind. The same ferruginous water, which appears to contain rather a less quantity of the carbonic acid, also flows with small bubbles on its surface, into the old basin of the mineral spring, at present choaked up with mire, or, perhaps, designedly filled up by the malicious Abassines; it runs in a very small stream into the basin recently formed, and is separated from the former only by a narrow sandy path. — The distance of the next angle of the rivulet Khofada, which flows with rapidity against the old and new basins of the spring, so that it has deeply undermined its bank, is only thirty-seven English feet from the old basin, and twenty-eight feet farther from the real spouting spring. This rivulet descends in a direct line towards the spring, and it may be apprehended that it will gradually make its way to

the mineral spring itself; an event which might render the restoration of the latter very difficult and expensive. Hence it would be prudent to divert the course of the rivulet Khofada, by means of a canal, which might be opened across the marshy low country; to dam up the old conduit of the rivulet, and thus to secure the excellent spring of mineral water. For this purpose it would be necessary to turn the course of the rivulet above the angle nearest to the mineral spring, a direction which is pointed out in the Plate by a punctured line; as the distance thence to the Elkofhu is only about seventeen fathoms.

The new basin of the spring is of a conical form towards the spouting mouth, is sandy at the edge, and upwards of twenty-seven feet long, and seventeen broad.

The principal gulph is not exactly in the middle of this basin; its limpid mineral water issues with violent emotion, continually ejecting large bubbles, together with a ferruginous brown and sleek sand, like fine gunpowder: it is four or five arshines wide; and on sounding it with the plummet, we ascertained its depth to be upwards of nine feet. But on examining it with the pikes of the Kozaks, we found that it was upwards of five arshines deep, and that at the bottom it contained rocky cliffs, apparently proceeding in an oblique direction. The boiling spring, by the brown colour of its sand, and the large bubbles of water it throws up, perfectly resembles coffee in a state of ebullition. The violence with which the water forces this sand to the surface, is more or less considerable at different times; and frequently, on immersing a glass immediately below the surface of the water, it was taken out more than half full of this brown sand; which, however, is instantly precipitated,

tated, and the effervescent water appears as clear as crystal: the sand likewise, by its own weight, falls to the bottom in the spring itself, so that it is not carried into the channel of the bason. It may be easily conceived, what a mass of water must proceed from a spring, which is powerful enough to cause bubbles of such magnitude as to support even the human body when floating in the bath, instead of allowing it to sink by its own weight. Its junction with the two other, though more considerable rivulets, is attended with so remarkable an effect, that notwithstanding the great loss of carbonic acid in its course, and subsequent mixture with the water of those rivulets, the barbel and trout, which are very numerous in their superior tracts, cannot exist here. If such fish are taken and plunged into the spring, they immediately float motionless on its surface, and recover but slowly when replaced in the water of the rivulets.

The sandy mud on the border of the bason exhibits a slight precipitate of the finest martial ochre, which has also formed a second border somewhat above the other, at the height to which the spring rises in summer, when its water is most abundant. A similar delicate precipitation is perceptible on the small lime-stones scattered in the channel formed by the spring, as far as its entrance into the bason, where a bath has been erected, and a slight attempt has been made to secure the water by dams. It appears to me however very probable, that this sediment of ochre arises merely from the admixture of the chalybeate waters oozing from the shallow spring situated above; for the water drawn up from the large deep spring, as well as that collected from the small adjacent veins, does not contain

contain any perceptible traces of iron. These veins are of different sizes; they here and there spout forth in the shallow parts of the basin, sometimes of the thickness of a man's wrist, and sometimes only that of a finger, without however agitating the brown sand beforementioned. On the contrary, the border of the basin, and farther down in the channel, where the mineral water takes its direction over a stony dale entirely covered with ochre, the taste, as well as chemical experiments, evince that it contains a considerable portion of iron particles. This water, on being drawn up suddenly, is as limpid as crystal; when its sand is precipitated, it throws up a number of little bubbles like the best Champagne wine, and likewise stimulates the tongue with an agreeable acid, which is quickly conveyed to the nose. It is so much impregnated with air, that bottles filled with it, though well corked, often burst before they can be carried to the higher parts of the neighbourhood, where visitors usually encamp. Although this excellent water parts with a great proportion of the carbonic acid with which it is supersaturated, it still retains a quantity equal to that contained in the strongest Seltzer water; even after it has stood to settle, and is put in strong bottles, or thick, small casks, either of which ought to be well corked, and coated with tar. When the cork is drawn, the water makes a report; it remains fresh and clear, and is not rendered turbid by the magnesia it contains; unless when boiled. We carried a small stock of this mineral water along with us for making tea, and found it very palatable, though it had lost in some degree its limpidity.

On plunging the hand into the spring, no remarkable sensation of cold is felt; the water, on the contrary, seems in

some veins to be lukewarm, particularly during the cold air of the morning. But it is apparently cold when drank, and especially when the heat of the sun promotes its evaporation, and consequently imparts to it a degree of freshness. If it be drunk while the body is heated, it has an effect on the stomach similar to ice. By the thermometer of Reaumur it appears, that this water has a temperature of about ten degrees, when the atmosphere is at sixteen. It effervesces with all kinds of wine, has the taste of Seltzer water, and may be drunk in any quantity at pleasure, without repugnance or danger, as it disagrees but with few persons, and generally with those who have an alkalescent stomach, who are fond of acids, or are troubled with the tape-worm. It easily and quickly passes off by urine, is attended with a slightly laxative effect, and sometimes even diarrhœa; but nevertheless evidently refreshes and invigorates the body, inasmuch that it has produced wonderful effects on several sick and debilitated persons. This mineral water is of the greatest efficacy in hæmorrhoidal obstructions, after inveterate fevers, and the subsequent chronic complaints thence originating, as also suppression of the menses, and similar indispositions, which are frequently the forerunners of disease. I make no doubt that it will be found of great service in various maladies, if it be more generally used, and acquire greater celebrity.

With respect to the constituent parts of this mineral spring, I shall observe, that it appears to me to be indebted for its remarkable briskness principally to the carbonic acid, saturated with lime and magnesia, as well as to the salts it holds in solution. When placed on a very gentle fire it speedily boils, with great

great agitation, immediately begins to grow turbid, and deposits a white sediment. From sixteen pounds of water, the dry sediment obtained by evaporation weighed two drachms and twenty grains. If lixivium of soda be added, it strongly effervesces and boils, while it instantly forms a thick, milky cloud, which gradually falls to the bottom ; and on a new addition of the lye, the water again effervesces. A solution of the Prussian blue likewise caused a copious, white precipitate, and at the same time rendered the water turbid. A solution of the sugar of lead, after a strong effervescence, deposited a sediment as white as snow, which could be again dissolved. On adding a solution of sublimite, it produced a similar effervescence, together with a trifling white precipitate. Silver, dissolved in the nitric acid, afforded a white precipitate, which soon after turned black. A solution of mercury in the same acid instantly formed a yellow precipitate. Sulphuric acid did not produce any effervescence, nor the smallest change in the water. A solution of cream of tartar gave a white precipitate. Pure ammonia, as well as the tartarised spirit of sal ammoniac, rendered the water white as milk, and afforded a similar sediment. Blue colours are little, if at all changed, by this chalybeate. The tincture of galls, and an infusion of tea, were scarcely tinged by this water when fresh drawn from the spring ; on the contrary, when mixed with that taken from the basin or the rivulet, they communicated to it a feint blueish tint. But the water taken from the environing swamps, and the old basin, which is now choaked up with a slimy mud, on the addition of tea, suddenly strikes a colour as black as ink, affords a very small portion of air, on being combined with al-

kali, and deposits a whitish precipitate of a filthy appearance; but, when heated, quickly forms a similar sediment of a yellow colour. Twelve pounds of this water produced a precipitate of one drachm, thirty-eight grains.

The white sediment of the pure spring water loses in drying about seven grains. The result of the chemical analysis which M. Lovitz, the academician, had the kindness to undertake, gave from one hundred and thirty-three grains the following ingredients :

Of muriat of magnesia	-	-	-	-	1 grain.
Glauber's salt in a dry state	-	-	-	-	46
Vitriolated magnesia in ditto	-	-	-	-	25
Muriat of soda	-	-	-	-	10
Carbonat of lime	-	-	-	-	26
Carbonat of magnesia	-	-	-	-	10
Carbonat of iron	-	-	-	-	2
Sulphat of lime	-	-	-	-	13

The yellow sediment of the veins of chalybeate water reduced by exsiccation, at ninety degrees, afforded the following result :

Of muriat of magnesia	-	-	-	-	1 grain.
Glauber's salt in a dry state	-	-	-	-	24
Vitriolated magnesia in ditto	-	-	-	-	17
Muriat of soda	-	-	-	-	12
Carbonat of iron	-	-	-	-	10
Carbonat of lime	-	-	-	-	16
Carbonat of magnesia	-	-	-	-	4
Sulphat of lime	-	-	-	-	6

The

The origin of the mineral spring of Alexander might probably be discovered in a horizontal line of sand-stone, below the calcareous strata of the surrounding mountains, from which the spouting spring appears to convey the brown sand. The environing mountains exhibit, almost uniformly, a calcareous, yellowish stone, of a sandy nature, in thick layers, which we likewise discovered on the other side of the Podkuma, over the inferior horizontal beds of greyish lime-stone. At the base of two eminences, situated a considerable distance to the South-east of the spring, towards the source of the Khofada, and behind the next mountains, we first discovered, in the lowermost stratum of the one, a sand-stone of a red brown colour; and in the other, a grey, fine, mellow, and micaceous sand-stone. If it be true, that the water of the mineral spring is more abundant in summer than in autumn and winter, it appears that it derives its origin from the snowy mountains with which the horizontal strata are connected. Besides, it is evident that the vein of the spring runs at a considerable depth below the bed of the rivulet which it crosses, and with which it has no communication. Hence there is no reason to fear that the turning of the course of the rivulet Khofada, which threatens to burst its banks, and combine with the spring, will be attended with the least disadvantage.

At the foot of the high eastern mountain, contiguous to the valley in which the mineral spring rises, we saw immediately above the rivulet several abrupt rocks, as represented in Plate 16, *a. b.* which are remarkable, as they consist of a hard tophus, in thin successive layers, interspersed with brown, ferruginous lamina, nearly resembling those of Carlsbad, and full

full of fine impressions of leaves of trees, and stalks of plants : it also contains petrifications of small shells, inclosed in several brown and clayey nests or clusters. As these rocks are now entirely exposed on the declivity of the mountain, it is difficult to imagine from what quarter the spring, or rivulet, formerly flowed, to which they are doubtless indebted for their origin. I have met with no distinct vestiges of petrifications in the limestone of the neighbouring mountains, either in its superior sandy bed, or in the grey and solid stratum which lies exposed in the currents of the rivulets.

On the 11th of September, I employed the forenoon in collecting those beautiful flowers which the season then afforded, on the high mountains situated towards the source of the Khofada, which were richly covered with plants. At about half the ascent of those mountains, where they are overspread with tall grasses, I found the *Aconitum Anthora*, *Dracocephalum Ruyschiana*, and *Gentiana septemfida* *, producing generally pentapetalous flowers : the *Gentiana Cruciata* and *Amarella*, with very large blossoms, the *Chrysocome Linosyris*, a tall *Scabiosa*, the *Centaurea montana* and *Jacea*, *Salvia verticillata*, *Phlomis tuberosa*, and *Origanum heracleoticum*. But on the higher rocks I discovered two species of pinks ; the petals of the one being red on the top and yellow at the bottom, while the other grew in the form of a thick and branching tuft of grass, with a strong root, a long calix, and white petals ; as also a white blooming *Campanula*, with a long stalk, hanging down the precipices of the rocks, and producing large bell flowers, the *Scutellaria*

* Flor. Rossic. Pars II. Tab. 92, Fig. 2, p. 11.

orientalis, *Teucrium chamædrys*, *Onosma simplex*, a particular *Dracocephalum*, *Sedum Hispanicum* and *vermiculare*, *Thymus Zygis*, *alpinus* and *vulgaris*, *Ziziphora capitata*, one species of the *Aster*, and the *Rhamnus lycioides*, which spread on the rocks in the form of a fan. There is scarcely any wood in these environs, except towards the sources of the rivulets. I again observed here the *Gryllus obscurus*, *fuscus**, *cærulescens*, and *stridulus*, flying in great numbers; insects which are very common in Siberia, and were here of an unusually large size.

On the afternoon of the same day we returned to Constantinogorsk, where the Lieutenant-Colonel and Commandant of the place, MICHAEL MICHAELOVITSH VEROVKIN, received us with every mark of politeness.

The 12th of September I employed in surveying more accurately the mountain Metshuka, or, as it is called by Güldenstädt, Mashuka, as well as its anterior side, which consists of a species of tophus; and I was also desirous to examine the sulphureous baths of that remarkable mount. As these are subject to continual changes, I shall attempt a detailed description of its present state.

The whole mountain is situated on the common and extensive basis of the Beshtau, and its adjacent hills: it borders on the Podkuma, about five versts North-west below Constantinogorsk. On the same road which leads to the Circassian village

* See the second part of my former Journey, Supplement, pp. 77 and 727 of the original.

of Tramt, situated near the Podkuma, at the North-east base of the mountain, and which is remarkable for a very valuable race of horses; we also passed the bath, and travelled over the anterior part of this hill. The mountain itself is a calcareous mass, of considerable extent, and in a conical form; it is richly covered with wood, and apparently more than one-third part the height of the lofty Beshtau: it consists of a greyish, firm, calcareous mineral, without petrifications, not unlike the hornstone, and is disposed in tolerably thick, horizontal beds. On the southern side, this mountain, which is represented in the seventeenth Plate, with its anterior appendage, and the bath situated upon it, together with a distant view of the Beshtau, contains in the centre of its summit a deep cleft, like a valley overgrown with wood: the clouds of mist, which this day surrounded the Beshtau, made it appear as if emitting smoke; and this extreme fog, after having been entirely dissipated in the lower parts, remained towards the summit till mid-day.

From the foot of the mountain, the steep and narrow ridge, consisting of an uncommonly beautiful white tophus, extends along the low country of the Podkuma, to the West, and in a curvated direction towards the North-west, not unlike a promontory. This ridge divides itself at the western extremity into two others, one of which, at present covered with plants, extends directly to the West, runs nearer to the river, is upwards of two hundred paces longer than the other, and appears to be a more ancient production of the sulphureous waters. The view of the mountain is taken from the prolonged ridge just described, where the *Rosa pimpinellifolia* grows in abundance. On the southern side of the whole ridge, opposite to the river,

we







we observed here and there some as it were rounded projections of tophus, disposed in successive laminated strata, which appeared to owe their origin to small springs, or channels, of lime-water, impregnated with sulphur; and some of which still continued to run, while others were then in a dry state: these strata, as well as the whole mountain, abruptly decline towards the low country.

The most recent and important spring of hot sulphureous water now rises from the round extremity of the principal, but shorter ridge; its course is towards the North-west, from a perpendicular height of eight or nine fathoms above the base of this mountainous ridge, as is represented in the Plate. Several other strong veins of water spouted from this spring, before its current entered the low valley, where they mostly disappeared under the dry soil; after having passed over the laminated strata of tophus, they terminated in a round form, by two distinct steps. This curious tophus is perfectly white and pure over the whole of the projecting height; while it exhibits on the surface the undulating motion of the water. Its stratifications are so disposed that it forms hollow, successive layers of different thickness, in some places exceeding half an inch, and internally presenting flaky crystals, as it breaks in radiant, arborescent figures. In the uppermost stratum, the different spouting veins have formed small channels, in which I found a deposition of flowers of sulphur, and the green *Byffus therma-rum*. Near the source of the veins a bath has been hewn in the tophus stone, from which the overflowing water retreats, similar to a little rivulet. Contiguous to this bath, a small chamber has been built of wood, for the use of bathers.

From these newly watered slopes, near which, a little below the spring, we observed a mass of the finest and whitest mountain-fluor, we ascended the higher ridge by two other acclivities. The first imperceptibly declines, and extends to a length of about one hundred paces, while it forms a ridge somewhat round on the top, shews a slight, longitudinal cleft, and is ornamented with various kinds of rock-plants on its side. From the very spot where the principal ridge divides itself into two branches, in the manner above described, it rises still higher, makes as it were a rounded slope of sand-stone, and extends uniformly to a length of three hundred and twenty-five paces. This part of the ridge, which like all rocky declivities exposed to the South, produces various meridional plants, exhibits, in its whole vertical extent through the layers of tophus, a perpendicular cleft, nearly in a straight line, and presents a chasm, from a quarter to a whole arshine in breadth, and which, in a few places, not filled up with earth, is of a depth that cannot be ascertained by the eye. From the collateral cavities of this cleft I observed the rock-plants in a vigorous state, especially where the soil had covered part of these hollows; namely, several kinds of dwarf-elms, oaks, and wild white roses, which are said to acquire a violet colour above the clefts; farther, the elder, creeping wild vine, cornels, the *Rhamnus lycioides* and *Catharticus*, numbers of the *Ruta muraria*, and other plants growing upon the rocks.

From this cleft the ridge again mounts with a slope, but less considerable than the former, and becomes so narrow that the upper part is often only ten fathoms broad: it rises progressively towards the top, where it forms a glen scarcely nine feet broad,

broad, and extends to an uniform depth, between two old rocky walls, composed of tophus stone, but which are sometimes interrupted on the northern side; though the sloping ridge continues its course for two hundred and eighty paces. In the glen we observed several dwarf-trees, such as the elm, the buck-thorn, cornels, *Evonymus*, and other coppice-wood, among which were the *Alkekengi*, and in a few places sedge, as well other plants that usually grow in the forests of this country.

As we ascended the ridge, it continued without either clefts or projecting rocks, to a length of nearly one hundred paces; but we now found, in an open cleft, upwards of a fathom broad and deep, by ten arshines in length, a natural hot bath, of a temperature rather higher than that of the inferior spring; it extends into the rock of sand-stone towards the East, is six feet wide, nearly ten fathoms long, and has a smooth vault, not unlike an artificial grotto. The Turcoman women bathed here, while their husbands resorted to the lower bath.

Contiguous to these baths, the ridge of tophus stone which hitherto extended on both sides, without interruption, began to communicate with the principal mountain, rising almost to the height of that which projects above the level of the Podkuma: and this elevation commences exactly at the spot where the parent hill presents the smoking cavity above alluded to, being about the middle of its ascent above the ridge.

Another sulphureous spring rises at a distance of one hundred and eighty paces from the bath before described, and which is situated along the ridge, gradually becoming broader, and having on its southern side several ramifications of old springs: here another cleft appears, at first empty, but afterwards fre-

quently covered with rushes, and at length producing the last-mentioned spring, which, like that of the former, makes a long channel used for bathing. The bath is from four to five arshines wide, has a collateral cleft, from one and an half to two arshines broad, by eight arshines long, and terminates at both extremities with a narrow, high-vaulted grotto. The water of these clefts apparently runs in a western direction towards the women's bath before alluded to, while it partly oozes luke-warm, and of a milky colour, from a rock eight arshines broad, which constitutes the southern wall of the clefts serving for baths, where the overflowing water has, by its deposited matters, formed a hillock of sand-stone.

Eighty paces farther, above the ridge, rises another spring of sulphureous, clear, and very hot water, which has likewise produced a small hilly prominence; and in the vicinity of this, as well as by the preceding springs, the *Andropogon Ischæum* and *Schænus nigricans* grew in uncommon profusion.

At one hundred and sixty paces from the latter, and in the ridge of tophus-stone, which becomes progressively more rocky, we met with a spring of fresh, cold, and very potable water, contained in a stone basin. — But two hundred paces farther, we again discovered a warm, sulphureous spring, which was the last of this kind, and issued from a round hillock of sand-stone. The layers of tophus-stone now began to decline as we ascended the steep and calcareous mountain, where the road to *Tramt-Kawak** again leads down the hill, whence we had a view of that place in the low country before us. About twelve

* Kawak, in the Circassian dialect, signifies a village, or burgh.

hundred paces from the latter sulphureous spring, and after having ascended a rocky path, we arrived at a dreadful abyss on the steep side of the mountain, at the foot of which the village is situated : — this gulph has been apparently formed by the fall of a cylindrical mass of calcareous rock, no less than twenty fathoms thick ; it cannot be approached without danger, on account of the giddiness it produces in the beholder. After repeated trials to ascertain its depth by means of a plumb, I found that it was from seventeen and an half to eighteen fathoms deep : and the stones which we threw into it were nearly three seconds in falling. The water at the bottom appeared to be little more than two feet deep, and the weights plunged into it were perceptibly warm when withdrawn : it is likewise of a sulphureous nature, as is manifest from the strong smell of the *hepar sulphuris* emitted from the abyss. Notwithstanding this suffocative exhalation, wood-pigeons, which we started by throwing in stones, build their nests and pass the winter in this constantly warm retreat. The greater number of these birds were out, in search of food : when we departed a large flight of them appeared, and, after having flown several times round this subterraneous abode, they plunged suddenly into the gulph. On approaching its brink, and laying ourselves down on our breasts, we could see the water at the bottom, and two very large caverns, one of which we observed towards the hollow middle of the great mountain, and the other in a direction towards the front of the hill. Between the stony strata are many clefts, in which pigeons build their nests. It was awful to behold the abrupt rocky wall on the side of the
moun-

mountain, projecting many fathoms in a perpendicular line above the abyfs. The lime-ftone is of a light grey colour, and of a compact texture, but much broken. We perceived on the edge of the mountain feveral fhrebs, rofe-bufhes, and the *Hedysarum argenteum*, and along the mountain we met with the *Centaurea orientalis* in abundance. Befide thefe, I alfo remarked on the whole mountain the faded parts of the following plants, which delight in a warm fituation, viz.

<i>Rosa pimpinellifolia</i> ,	<i>Ciftus Fumana</i> ,
<i>Rhamnus lycioides</i> , fometimes } erect, and at others fspread } out in the form of a fan, }	— <i>Helianthemum</i> ,
<i>Asphodelus luteus</i> ,	<i>Alcea ficifolia</i> ,
<i>Euphorbia</i> ,	<i>Parietaria judaica</i> ,
<i>Inula enfifolia</i> ,	<i>Cachrys Libanotis</i> ,
<i>Euphrasia lutea</i> , ftill in flower,	<i>Bupleurum angustifolium</i> ,
<i>Teucrium Chamædrys</i> ,	<i>Scabiosa ochroleuca</i> ,
— <i>Chamæpithys</i> ,	<i>Nepeta Ucranica</i> ,
<i>Cornus mas</i> ,	<i>Campanula Siberica</i> ,
<i>Sedum Telephium</i> ,	<i>Solanum Dulcamara</i> ,
— <i>Hispanicum</i> ,	<i>Physalis Alkekengi</i> ,
— <i>vermiculatum</i> ,	<i>Thymus Zygis</i> ,
<i>Aster atticus</i> ,	<i>Valeriana major</i> ,
<i>Chrysocome Linofyris</i> ,	<i>Centaurea montana</i> ,
— <i>biflora</i> ,	<i>Asclepias nigra</i> ,
	<i>Crambe maritimæ affinis</i> ,
	<i>Adiantum Ruta murar</i> , &c.

From a flight investigation of the fulphureous water of the hot baths, fituate upon the mountain Metshuka, I am induced to make the following remarks.

The

The smell of sulphur, which is perceptible at a considerable distance round them, the snow-white tophus-stone, of a crystalline nature, which is here very frequent, and the flowers of sulphur precipitated in the channels of the descending water, are sufficient indications of its principal constituents. The heat of the water, though it has probably run over the whole length of the tophus ridge, is, in the most distant spring, hotter than the hand can bear, and causes the mercury to rise in the thermometer of Reamur fifty-seven and an half degrees, or one hundred and sixty-two degrees of Fahrenheit. The abundant calcareous sediment of the water is at first, and continues for some time after, as soft as pap, in which state it is used by the Circassians and other tribes for whitening their houses. In a bed of this soft substance, which is four or five inches thick, needles of the spath kind are gradually produced; and this crystallization becomes progressively more frequent, till at length the whole bed is converted into a heavy snow-white tophus, which exhibits pores and almost perpendicular needles in its fracture. These beds are not so firmly crystallized as those of the tophus stone of Carlsbad, but appear on breaking them to resemble the cellular texture of bone. The ancient strata of this mineral become progressively more firm, and acquire the consistence of stone by the action of rain-water. The most recent strata are still loose and friable, but acquire in time a more solid consistence, though preserved in a dry state. This species of tophus is acted upon by the nitric acid, which causes a violent effervescence, so that the stone is completely and speedily dissolved: if exposed to fire, it discovers no perceptible trace of sulphur.

Every

Every pound of the last-mentioned sulphureous water contains upwards of sixteen grains of a white earthy sediment, which is suddenly precipitated by a solution of alkaline salt. Silver, whether dissolved or in substance, acquires a black colour from this water. A solution of mercury in nitric acid yields a yellow precipitate. When mixed with spirit of sal ammoniac it coagulates like milk; with vitriolic acid it does not effervesce, but nevertheless precipitates a small quantity of white earth. It imparts to blue paper a red tinge; but when treated with an infusion of galls, it does not produce the least black colour. A solution of borax occasions a yellowish and flaky precipitate, which feels greasy.

The water has a slightly styptic, sweetish taste, and evidently contains a portion of alum, which renders it serviceable in diarrhœas and dysenteries, particularly when the first passages have previously been evacuated. In rheumatic pains, cutaneous eruptions, and inveterate ulcers, it is of essential service, if used as a warm bath. Gouty and paralytic patients have recovered by its use. In intermittent fevers, however, this bath ought not to be resorted to, as it is liable to occasion dangerous obstructions.

It is said that the abyfs on the mountain Metshuka, as well as the longitudinal cleft on its anterior part, are the consequences of an earthquake, which was perceptibly felt in this country about twenty years since, and that the spring supplying the baths had thus received a different and much deeper course. To judge from appearances, it is highly probable that several changes of a more ancient date have preceded; and we must admit that an incalculable number of years were necessary to

produce gradually the ridge of tophus-stone, in its whole extent. The principal situation of the fire from which the spring derives its heat and constituent parts, is doubtless in the deep cavity of the mountain Metshuka, which appears to contain several hollows in its vitals, as is evident from the gulph before described. The Beshtau likewise produces a hot spring, though inferior to the former, but which I had no opportunity of examining.

As it was my intention to explore this mountain, I ascended it for that purpose on the 13th of September. The Beshtau is frequently enveloped in clouds to its very base, and its summit even appears to project above them. It is situated on a level and very extensive eminence, rising much above the current of the rivers Kuma and Podkuma, together with several adjacent mountains, among which the Metshuka, just described, is one of the nearest and most considerable. This eminence presents no species of rock, except the very ancient lime-stone, which forms the whole of this mountainous tract, and has scarcely any petrifications: it occupies the whole space between the two rivers, and produces no trees, but those growing on the four contiguous mountains. In the back ground, they are connected by what is called the asses' ridge, and form between them a large glen, or valley, from the midst of which, and the loftiest of the whole species, rises a fifth, reaching the clouds with its summit: this is of a conic, or rather angular form, and so narrow on its top, that scarcely ten persons have room to stand by the side of each other. From its summit several narrow ridges extend towards the four adjacent mountains. Hence, from this concatenation, the mountain has justly received

ceived the name of Beshtau, or the five-mounts. Its profile is distinctly represented in the back-ground of the seventeenth Plate. — Towards the top of the high mountain the wood begins to decrease, and to degenerate into dwarf trees: the shrubs growing on the extreme or uppermost part, before we arrived at its barren summit, consisted chiefly of the beautiful *Azalea pontica*, by the Circassians called Aoi, and which thrives there in uncommon abundance, generally an ell and an half high, Russian measure. The other species of trees and plants which, though at a season so far advanced, were still observable on the woody part of the mountain: and some of which, not being contained in the list of plants given by Guldenstädt, are nearly the following:

Cratægus Aria,
 ——— *nigra*,
 ——— *oxyacantha*,
 ——— *monopyrena*,
Pyrus præcox,
 ——— *hyberna*,
 ——— *malus*,
 ——— *Cydonia*,
 ——— *torminalis*,
Mespilus Germanica,
 ——— *Cotoneaster*,
Prunus Cerasus,
 ——— *avium*,
 ——— *fructu flavo, acidulo*,
 subrotundo,
Betula alba,

Carpinus Betulus,
Fagus sylvatica,
Quercus Robur,
Acer platanoides,
 ——— *campestre*,
Fraxinus excelsior,
Ulmus pumila,
Populus nigra,
Cornus mas,
 ——— *sanguinea*,
Sambucus nigra,
 ——— *Ebulus*,
Ribes Grossularia fructu, obscure
 rufo,
Rubus fruticosus,
Rosa pimpinelloides,

Rosa

<i>Rosa spinosissima,</i>	<i>Althæa officin.</i>
— <i>canina,</i>	<i>Ononis lævis,</i>
<i>Ruscus aculeatus,</i>	<i>Aconitum Anthora,</i>
<i>Juniperus communis,</i>	<i>Saponaria officin.</i>
— <i>Sabina,</i>	<i>Sempervivum montanum,</i>
<i>Spirea crenata,</i>	<i>Onopordum,</i>
<i>Chrysanthemum corymbiferum,</i>	<i>Lithospermum purpureocærum,</i>
<i>Crambe orientalis,</i>	<i>Gentiana Crucjata,</i>
<i>Thymus Serpyllum,</i>	<i>Impatiens nolitangere,</i>
<i>Papaver orientale,</i>	<i>Leonurus Cardiaca,</i>
<i>Phlomis tuberosa,</i>	<i>Parietaria judaica.</i>

On the summit of the last-mentioned mountain is erected a high pyramid of flat stones, round which we observed dead branches of trees; and on which have been scrawled some characters in the Tartar language. The most convenient road to ascend this summit is that along the eastern side of the principal mountain. The wood does not uniformly extend over the foot of the mountain, but stretches farther on its northern side, where it continues beyond the vallies bordering on the adjacent heights; while towards the East the soil is covered with trees as far as the mountain Metshuka. The hills called Danitla and Sheepfikai also produce much wood; the *Beshtau dikako*, on the contrary, which is situated near the banks of the Kuma, is entirely barren. From the summit of the Metshuka, we observed that the mountainous tract which connects the Beshtau with the principal mountains, runs chiefly in a direction with the stream of the river Kuma, between which and the Kuban the eminences rising progressively,

sively, extend towards the South-West, till they unite with the Elburus, situated in this country. The most considerable of the mountains which form a chain with the Elburus are, Keshergan, Barmamut, and Auar-fetsh, which lie near the sources of the Kuma and Podkuma; between these and the Baklan there are towards the East, Mount Urdi and the mountains of Kandhall, as well as several others. Towards the North and East of the Beshtau an extensive plain presented itself to the eye; nay, in clear weather, we could even see as far as Kislar, and the Caspian Sea.

According to the observations of Professor Lovitz, made in the month of September, the barometer near the Podkuma was, at thirty-five minutes past one, at twenty-six inches, five and one-third lines; the thermometer one hundred and thirty-seven degrees. At the foot of the superior mountain, in the wood, at nineteen minutes past three, the mercury had risen to twenty-five inches, one line seven-fifths; the thermometer one hundred and thirty degrees. On the highest summit of the mountain, at twenty-five minutes after four o'clock, the barometer stood at twenty-three inches, ten lines; the thermometer at one hundred and fifty degrees. The barometer on the summit varied in twenty-four minutes to one-tenth of a line. The map prefixed to this volume will give a distinct view of the geographical situation of the Beshtau.

The Beshtau, on account of its property of attracting the vapours of the atmosphere, like all other calcareous mountains, is a complete barometer to the inhabitants of this country. As soon as the weather threatens to be rainy, it covers itself, in the phrase of the mountaineers, as it were with a hat, or even becomes

becomes completely enveloped to its very base with a cloudy garment. But when the weather promises to be serene, the clouds gradually precipitate, and its summit is visible and clear.

On the 14th of September I returned to Georgiefsk. An attempt was at this time making to induce the Circassian princes voluntarily to appoint regular judges for settling their controversies, and terminating their continual feuds. It was proposed to establish two principal tribunals for the Princes, and two others for the Ufdens, or Nobility; whose members were to receive salaries assigned them by the Imperial Court. The Princes, indeed, had been prevailed upon by the good offices of the present Mufti, appointed by the Kasan Tartars, as well as by the armed mediation, which consisted of a strong body of troops, encamped on the banks of the river Bakfan, and commanded by Major General Savelief, to make choice of judges. On the 15th of that month these judges were presented by the families of the great Kabarda, and on the subsequent day by those of the small Kabarda, to the Governor and General Ivan Vassilievitch Gudovitch, who resided at Georgiefsk. They elected as President of the tribunal of Princes, with a pension of two hundred rubles a-year, Prince Dshangot, son of Sedak, for the families of Misauoft and Atashuka; and for those of Bekmurfa and Kaituka, of the small Kabarda, they chose Ali, son of Salatkiereef; as assistant judges, with salaries of one hundred and fifty rubles each, were nominated the Princes Muffa and Adilgirei, the former being the son of Karamurfa, and the latter of Temruk Hadshi; farther, for serving in a similar capacity to both

both tribes, they appointed Atashuka son of Khamurfa, and Atashuka son of Kafi. The tribunals of the Nobility were, for each Kabarda, composed of a respectable Ufden as President, with a salary of one hundred and thirty rubles, and seven noble and ecclesiastical assistant Counsellors, who were to receive only one hundred rubles per annum.

These tribunals were to hold their sittings near the banks of the Bakfan, where a camp was pitched on the occasion. As the ceremony of their installation was likely to be attended with tumult and riot, especially among so disorderly a people, I was induced to make an excursion to the mountains as far as the encampment of the Russian troops: on this short journey I was accompanied by the polite and cheerful Mufti.

In the morning of the 19th we crossed the rapid Podkuma, which rolls over a bed of flints, having, on the left towards Georgieffsk, an elevated bank, and on the right a vast low country, which imperceptibly rises, and is covered with trees and brush-wood; where I remarked a species of red cherry in great abundance. Over this bushy country also runs the rivulet Yetoka, remarkable for an antique statue*. On pursuing our journey, we next arrived at an open steppe; on our left we observed some eminences; and a few versts farther, we descended to an extensive and somewhat declining plain, whence we could see at a distance the terrace of a higher steppe, similar to a steep shore of a considerable extent, and marked by bays.

The low country is intersected by the rivulet Saluka, or Solka, which runs over a bed of granite, ten versts from

* See the Travels of Gldenstdt.

Georgieffk. On the side of this rivulet, and below the shore before alluded to, winds a marshy branch of water covered with rushes, on the banks of which are situated several farms belonging to the fort of Mariinfka, built on an adjacent eminence.

On reaching this apparently ancient shore, which extends along the Solka, and is connected with the high country on the banks of the Kuma*, into which the Solka falls near Alexandroffkoe Selo, we saw before us an entirely dry, but verdant and very fertile plain, where the large *Crambe orientalis* grew abundantly and in luxuriance; while it produced the second leaves of the season.

The Russians call this plant Katran, the Tartars Toturgan, and the Circassians Batirgan. — Its roots resemble those of the horse-radish, but were often thicker than a man's arm, above an ell deep perpendicularly in the ground, blunt at the end, and surrounded with smaller roots at the extremity, about the thickness of a finger, which grew still deeper than the parent root. They are dug up for the use of the table, as a substitute for horse-radish, and the younger flower-stalks may be dressed like brocoli. The same stalk, when withered and dry, is broken by the wind, and dispersed with its seeds in various directions, so that it spreads to a distance of several feet, and produces round bushes of new plants. The waggoner of Little Russia, who travels through this country, gathers those stalks, and uses them as fire-wood when he encamps on the

* Compare what has been said in page 78 and following, relative to the probable ancient shore of the Caspian Sea, on the right bank of the Kuma.

road. Although the seeds of this plant are carried by the winds to the northern part of the steppe, it does not propagate in the country situated between the Volga and the Don: while in the Crimea, and on the banks of the Dnieper, it grows abundantly, and consequently appears to thrive only in a southern latitude. The level steppe continued without interruption for fifteen versts farther, till we arrived at an extensive valley, upwards of ten fathoms deep; its bottom is full of pebbles, over which the little rivulet Kuria, or Kura, flows between small bushes and cabbage gardens.

On the opposite bank, which is equally high and steep, is situated the miserably built fort Pavlofskaya, strengthened with ramparts and gabions.

The deep and extensive valley of the Kura, the soil of which consists entirely of pebbles, has doubtless been originally produced by a much larger stream than that of the little rivulet at present almost imperceptible; and as this valley progressively extends, and rises towards the West and South-West, as far as the river Malk, in the country of Byeloi Metshet, it is highly probable that this river, which rolls over similar pebbles to those found in the valley, must formerly have had its efflux into the ancient and more extensive Caspian Sea. Perhaps a part of this stream at that remote period flowed over the ground, presenting traces of the Solka towards the river Kuma, and had a common mouth with the latter; after running over a transverse valley situated between Byeloi Metshet and the rivulet Solka. This, like that of the Malk, presents a bed full of pebbles, and its current has certainly been changed in later times, as is evident from its traces, which still exist between

Solanoi Brod and Proshladnoe.—Nay, it is even probable that the Bakfan, the Terek, and other rivers, may formerly have emptied themselves into the ancient Caspian Sea, after running from the mountains in a straight northern direction, while they deposited the quartz sand carried along with them, and thus produced the tracks of drift-sand on the steppes between the present river Kuma and the Terek.

In the valley of the Kura, I observed the *Centaurea solstitialis* still in flower. We changed horses on the other side of the fort, in the contiguous village inhabited by Kozaks.

The plain now gently rises towards the river Malk, which, after travelling ten versts, we reached near Soleiman Brod: here was a redoubt, guarded by Kozaks of the Ural. This river runs over a bed of pebbles, between argillaceous banks, partly abrupt, but scarcely in any place more than two fathoms high: the pebbles in its bed were reddish, whitish, and grey granite; black basalt, appearing perfectly porous; blackish, greenish, and brown porphyry; a few specimens of red jaspers, marked with veins similar to quartz; and lastly, a variety of calcareous concretions. At this season the water scarcely reached the bellies of our horses, and had a rapid current. The bushes we observed growing in the low country opposite to the river, consisted of the *Hippophæ rhamnoides*, red and almond-leaved willows, between which grew numbers of wild creeping bramble-berries, and the *Althæa hirsuta*; while on this side of the river we met with the *Amaranthus Blitum*, wild hemp, the *Mentha spicata*, *Xanthium*, and a variety of thistles.

As soon as we had passed the Saluka, we frequently met with corn-fields belonging to the Circassians who inhabit the conti-

guous villages, and were now getting in the harvest. After a journey of some versts, over a level eminence, we arrived, on the opposite side of the Malk, at an extensive plain, which was intersected by two rivulets, running between soft and shallow banks. Near one of these rivulets, called Sholkushin, the Circassians were, in the year 1779, attacked by the brave General DE FABRICIAN, who dispersed and defeated them after a great slaughter; a victory which is well attested by the large sepulchral hillocks containing the bodies of the slain, and the declining tops of which have formed cavities. Some distance farther, on our left, we visited several Circassian villages, belonging to Prince DEVLETUKA, of the tribe of Tambi.-- Around these villages, on the high steppe, we noticed many mounds of earth which did not appear to be of Circassian origin, but rather to belong to a very poor tribe of people; because they generally contained no articles of value, except a few fragments of iron-work. But here and there we also met with Circassian monuments, consisting either of brick-work, or piles of stone; and in a straight line towards one of the villages, we discovered respectable sepulchral monuments appropriated to the family of Prince DSHAMBULAT. In a direction from East to West, though not in a regular line, we counted six tombs built of stone, such as are represented in the seventh Vignette, all being regularly constructed of a soft species of the *Saxum metalliferum*, or Piperino. Before the last mausoleum towards the West, we observed a sepulchral hillock, called Kurgan, on which is placed the tomb of a Hadshi, with an inscription-stone; in the vicinity round it there were many other sepulchres, partly built of a white, soft lime-stone, and partly surrounded with rails of

wicker-work, or simply covered with heaps of stones. The next and most considerable monument is an open square wall of seven arshines extent, with a globe on each corner. Our attention was next engaged by two octagonal chapels built of hewn stones, having very thick walls, which terminated in a vault, and were ornamented with a globe; their diameter measured nearly two fathoms, and in the inner height two fathoms and an half. About three paces farther there was a still larger wall, ten arshines square, decorated also with a globe on each corner; and twenty-four paces from this, we came to another square chapel, six arshines in diameter, and covered with a square vault. At a distance of twenty paces to the South of the latter, we observed a stone upwards of six feet high, in an erect posture; which was perforated on two of its corners. A little to the South, near the first square wall, we noticed, in a declining situation, a small sepulchral building, forming an oblong square, six feet high, and covered with a roof in the form of a wedge. All these buildings have on the southern side, and in the middle of the wall, a small window, which serves as an entrance by means of a few stone steps: above these windows is fixed a stone exhibiting Tartar characters, hewn out in the form of bas relief, and generally painted over with a reddish colour, but which I had not time to copy. All these tombs are built of a soft *Saxum metalliferum*, easily wrought by the statuary, and with a white marl stone of equal softness.—Among the stones of these sepulchres I found a species of black and red lava, which was perfectly distinguishable, and must have proceeded from a volcano which formerly existed

in some part of the promontory of the Caucasus; but notwithstanding my inquiries I could not learn its proper origin.

After passing the small rivulet Bakfan-ysh, at a distance of nearly ten versts, over a gently rising and mostly level steppe, we arrived at the camp near the river Bakfan, to which place our journey was directed. Soon after crossing the Malk, we had a view of the snowy mountains, and saw them progressively more distinct. Near the camp itself, which was sixty versts from Georgiefsk, they appeared very near to our station. The Elburus, the distance of which is here computed to be thirty or forty versts, or according to others it is reckoned eleven hours travelling on horseback, consequently about fifty-five versts*, was situated a little to the right, the snowy mounts of Tshagem and Bakfan directly opposite to our view towards the South, and the others in a line extending to the South-East. Before we reached the camp, we observed, in a lateral direction on the plain, two solid rocks of granite, one of which, on examining it more closely, I found to be upwards of twelve cubic fathoms projecting above ground, and forming an obtuse, irregular pyramid. On each of these rocks grew the lichen; consequently they could not be that species of granite which is decomposed in the open air.

The whole of this plain where the encampment stood was covered with fine verdure; its bed consisted partly of pebbles and partly of solid granite, which rises above the ground, and exhibits in many places on the surface a fine white sand, produced by the decomposed granite, and mixed with a great

* It is said that this mount is equally distant from the Beshtau.

proportion of micaceous particles. The plain, which extends a great distance to the North, becomes narrower towards the mountains in the vicinity of the Bakfan, where it is confined between level eminences on the left, and a chain of tolerably high mountains on the right of the river; so that the Bakfan at length continues its course between high banks, with a violent noise, over a bed of large and small pebbles: during the floods of spring, the rapidity of this river is almost irresistible, inasmuch that it can only be provided with temporary bridges. The mountains on the opposite side progressively rise as they approach the river, and at length form a steep rocky wall, which terminates in a lofty angle called Kisburun, or the maiden peak, the height of which must be at least forty fathoms. These precipitate walls contain lenticular, white concretions of lime-stone, which are deposited in a whitish, calcareous matter intermingled with sand. The left bank, on the contrary, to the height of seven or eight fathoms above the river, consists entirely of different pebbles, chiefly of a whitish granite and porphyry, among which were large and small lumps of granite, in so decomposed a state, that they crumbled to pieces on the slightest touch. All these irregular masses are accumulated and adjusted to each other, without adhering by any cement, and have an incumbent stratum of clay nearly two fathoms thick, and a black vegetable soil. The bed of the Bakfan, for the most part, consists of similar pebbles: on its right bank only we met with lime-stones. The *Galega officinarum* grows here near the bank, rather of a dwarfish size. On the projecting banks of the Bakfan we found numerous bushes of the *Hippophaë rhamnoides*.— Towards the source of this river are several Circassian villages:

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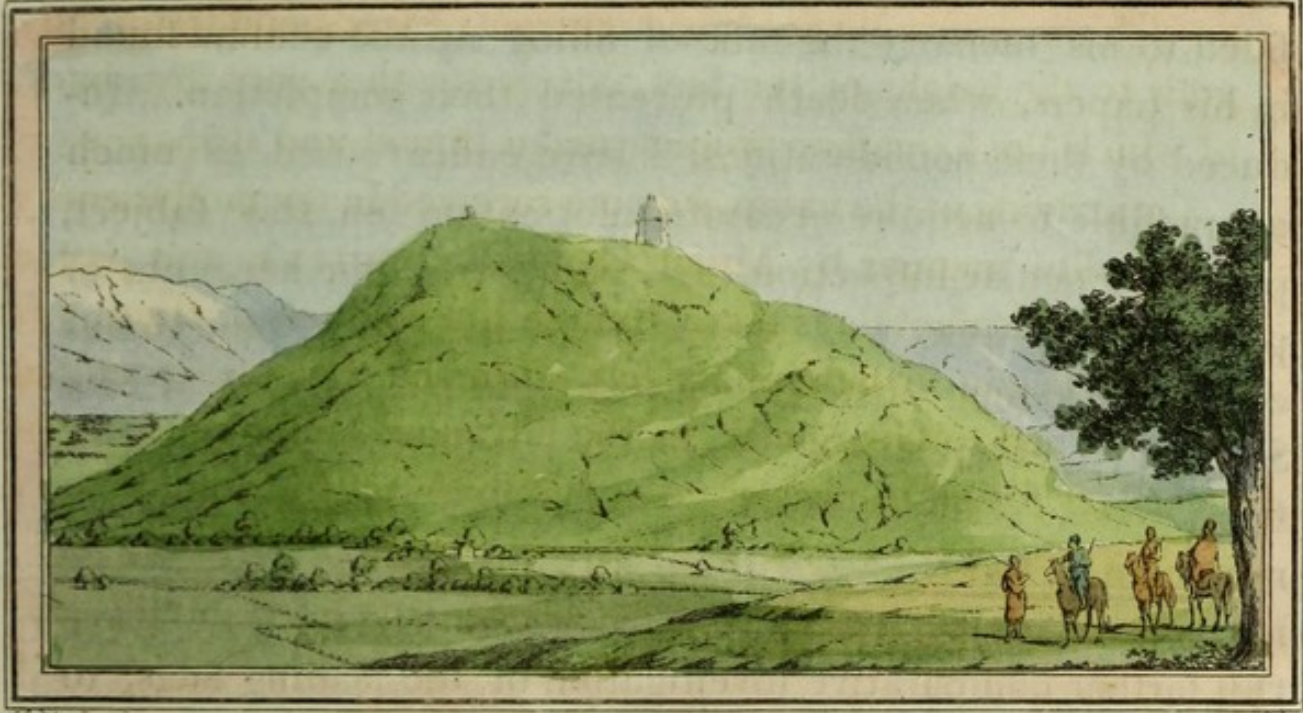
villages: we took notice of a much greater number now in a desolated state, and overgrown with luxuriant nettles, wild hemp, burdock, the *Onopordum*, *Echinops*, *Rubus cæsius*, worm-wood, and mugwort. The hemp of these regions, like that of Boulogne and China, uniformly produced variegated seeds, and frequently grew to the height of ten feet, covered with a very firm bark, of which the Circassian women make thread and strings.

On arriving at the camp, we were received in the most friendly and polite manner by Major General SAVELIEF, and passed two very pleasant days there, though the coldness of the nights already began to be sensibly felt. On the 21st of September we returned to Georgiefsk, as the advanced season rendered it necessary for us to accelerate our journey to Taurida.

Fig. 6.



Gravelling sculp.



*An Account of the Nations inhabiting the Caucasus, particularly
the Tsherkeffians, or Circassians.*

DURING my short residence near the mountains, I had an opportunity of collecting a variety of information relative to the inhabitants of the Caucasus. Much has already been said of the numerous nations speaking different languages, and residing within the precincts of these mountains. Some writers have been inclined to admit almost as many different races of people as there are principal names of tribes and families. GERBER, and others after him, have especially contributed to multiply them. GULDENSTADT is the first who has the merit

of reducing the small scattered tribes to certain classes, and of combining the names belonging to a particular tongue, by collecting accurate vocabularies. Being imperfect, however, in what related to their manners and customs, he probably confided to his memory the task of filling up the chasms found in his papers, when death prevented their completion. Induced by these considerations, I have endeavoured as much as possible to acquire accurate information on this subject, partly by ocular inspection, and partly from the accounts of persons who were well acquainted with that mountainous country: among these I shall with gratitude record M. DE STEDER, Lieutenant-Colonel and Quarter-Master in the Russian service. The fruits of my researches I propose to communicate to the reader, without attending to the similarity of my accounts with those of GULDENSTADT; as I shall leave the farther comparative investigation of the leading facts, to future travellers. The tribes of nations having been exactly classified by the last-mentioned writer, I shall in this instance generally adopt his method, as well as the geographical situation he has described, while I shall notice the tongue peculiar to each tribe. In this narrative, however, I propose to comprehend only those nations which inhabit the northern parts of the Caucasus, because they are more intimately connected with Russia, and have at different periods in a great measure acknowledged its sovereignty.

The following tribes inhabit the country situated towards the West of the Black Sea, beginning with the source of the river Kuban, which rises from the beforementioned Elburus, the highest mount of the whole Caucasus.

1. The

1. The small Abasa or Altikefek, signifying the six tribes, namely,

- | | |
|---------------|-------------|
| 1. Shantemir. | 4. Lou. |
| 2. Klitsh. | 5. Bibert. |
| 3. Kesha. | 6. Dudaruk. |

The people of this small Abasa, or Altikefek Abasa, inhabit a country between the rivulet Maraukh and the river Podkuma: they consequently occupy part of the 'Turkish and part of the Russian frontiers. Not submitting to the government of princes, but being ruled by the elders of tribes, they consider the Kabardines as subjects. These, on the contrary, striving for independence, have, on account of such dissensions at various times, more or less adhered to the Russian superiority; a great proportion of this high-spirited people have maintained their liberty, by resorting to the narrow defiles of the mountains beyond the Kuban. The following tribes have lately acknowledged the sovereignty of Russia, and are at present ruled by the commandant of Constantinogorsk.

1. Lou, or the Lovova family, consisting of fifteen hundred persons.

2. Bibert, or the Biberdieva family, amounting to sixteen hundred persons.

3. Klitsh, or the Klitshева family, of six hundred persons.

4. Shantemir, or the Shantemirova family, comprising seventeen hundred persons.

These families inhabit the rising country situated in the vicinity of the rivers Kuma and Podkuma, and live scattered in small villages. The Abassines were Christians, but their nobles now profess the Mahometan religion. In their manners,

dress

dress and mode of living, they resemble the Circassians; and there is likewise some similarity between the languages of the two nations. Although the former pursue agriculture, they maintain themselves chiefly by the rearing of cattle, and possess tall and beautiful horses. They would be a wealthy people, according to their ideas of property, if the Circassian Princes were less despotic and rapacious in their demands. On their surrender to Major General FABRICIAN, they were declared independent of these petty tyrants; but during the government of the succeeding and more indulgent commanders, they were again subjected to the yoke of the imperious Kabardines. At length, they were even in a manner intrusted to the inspection of the latter, in order to prevent, as it was pretended, their desertion from the frontiers of Russia. The consequence of this remissness however was, that the greatest part of the Abassines deserted their protectors and formed new settlements in the region beyond the river Kuban. Indeed the claims of the Kabardines on the submission of this people, are founded on mere usurpation; for, under the sacred pretext of friendship, the Princes of the Abassines were invited to an assembly, in order to enter into a more intimate connexion with the Kabardines; when these treacherous friends assaulted and murdered them, extirpated the remaining members of the family, while they compelled the nobles to submit to their dominion, and settle in the vicinity of the Beshtau.

The principal native places of the Abassines, beyond the Russian frontiers, are the following:

1. Klitsh, on the rivulet Kalmurfa, which falls into the Kuban, on its right bank, near what is called the stone-bridge,
or

or Tash-Kupyr, in the Tartar language, or Miva-lamysh in the Circassian.

2. Tramkt, on the rivulet Teberde, which empties itself into the Kuban, on its left bank, below the stone-bridge; as well as on the rivulet Sona, or Shona, which likewise falls into the Kuban on the same side, where we met with an old church belonging to the Christian Greeks.

3. Loukt, on the rivulet Kardanek.

4. Aflankt, on the rivulet Khafaut, which, after uniting with the Kardanek on our right, falls into the Selentshuk, or Indshik.

5. Dudarukvat, situate on the banks of the little Selentshuk.

6. Bibert, on the rivulet Maraukh, which joins the last-mentioned rivulet by its left bank. — The place called Ketshega, situate above the right bank of the Kuban, properly belongs to Klith.

From the description I have already given of the villages possessed by the tribe of Dshentemir, on the banks of the Nartzan, the reader will be enabled to take a comparative view of the dwellings and villages of the Abassines and those of the Circassians.

II. The great Abassa includes the following principal tribes :

1. The Beshilbai, who, in the woody promontory, inhabit the banks of the rivulets Kepir and Tzikh, which, after uniting near the stratified mountains, fall into the great Selentshuk by intersecting its left bank. They farther dwell in the black mountains *, near the source of the Urup, and partly also on

* By the black mountains is usually understood, that part of the lofty mountainous tract, which during summer is not covered with snow, and consists chiefly of schistus.

the banks of the great and little Tegen, which rise among the lofty mountains, and fall into the Urup, or Uarp, on its left bank.

These obstinate and rebellious people pay little respect to their Princes, and submit to no authority ; they could not even be subdued by the Russian troops sent against them. Their character and mode of living do not differ from those of the other Abassines. Their villages are either in woody regions, or in defiles of difficult access. Hence, as they live in woods and mountains, agriculture is much neglected ; but they rear goats and sheep, and also pay great attention to the cultivation of bees. From their country we obtain that famous, intoxicating, or what is usually called maddening honey, which the bees collect from the blossoms of the *Rhododendron* and the *Azalea pontica*. The tribe of Beshilbai lead a poorer life than any of their neighbours, and are great robbers.

2. The Barakai, another tribe of the Abassines, inhabit the country situate between the Pfinen and the little Laba, a short distance above the point where the last-mentioned rivulet falls into the great Laba through its right bank. The Pfinen takes its source in the southern angle of the horizontal mountains, as well as the Tegen, and joins the little Laba by intersecting its right bank. The Barakai occupy only a few villages, and in every respect resemble the other Abassines.

3. The Tubi and Ubukh, who dwell in the mountains above the Shaukesha, and spread towards the West.

4. The Shapfikh inhabit the country bordering on the Black Sea, and prefer the woody mountains of the western tract on the rivulets Antihir, Bugundur, Apin, Of, Tthebik, Satafa, and

Ships :

Ships : on the banks of the two first-mentioned are the villages called Abat, which belong to a nobleman of that name. Most of the Shapfikh live dispersed in the fields, and are divided into separate families : there are also some villages on the banks of the Satafa and Tthebik. The Abassines do not employ themselves much in agriculture or the rearing of cattle, but live chiefly by depredations. They have no Princes among them, and he whose family is the most numerous, or who shews the greatest bravery in piratical excursions, is considered as their chief magistrate. Their lawless habits of plundering travellers are extremely harassing to the Turks, inasmuch as they extend their incursions to the vicinity of Anape. — The rivulets beforementioned form a large swamp below Sani, by which they are connected with the Attakum, near the place where this rivulet unites with an arm of the Kara-Kuban, that has received the name of Yerli.

5. The Natukash, or rather Natkhu-Kaitshians, are another tribe of the Abassines, who inhabit the extremity of the Black mountains, which, above Anape, partly border on the Black Sea, and a branch of which extends, in a northern direction, as far as the Kuban. The rivulets originating from these mountains, and inhabited by this people, are as follows :

1. The Attakum, which, after uniting with several brooks, takes its course through a long morass, in a similar direction with the Kuban, and at length empties itself through the left bank into that river : it is inhabited by the family of Kuifuk.

2. The Bakan, on the banks of which is situate the village Kalabat, inhabited by many scattered families. This rivulet

intersects the mountains, in a direction from South-West to North-East, and forms a strong defile, through which a straight road leads to Anape: at the extremity of this defile it falls into the Attakum. In the upper parts of this narrow passage, near the road leading to Sutshuk-Kale, resides the family of Kharfek.

3. The Tzemes, which falls into the port of Sutshuk-Kale: to the South of this rivulet, the Natukhaffians possess fifteen others, bordering on the great Abaffa.

In the mountains, extending in a northern course as far as the Kuban, they also possess the following rivulets, on a tract of country expanding to the distance of forty versts along the last-mentioned river, consequently in a direction from West to East.

4. The Tasipsh, inhabited by the family of Shubak of the elder Naurus.

5. The Dshup, which is occupied by the family of Khafan Shukshe.

6. The Pribebs.

7. The Khups, the banks of which, as well as those of the preceding, are inhabited by the family of the elder Islam-Shukshe.

8. The Nefil, or Nepil, on which are situate the villages of the elder Shupako Kafho.

9. The Pfif: between this rivulet and the Nefil we observed a regular square wall and ditch, which had four passages like a Roman camp. Towards the North of the fens formed by the Kuban, there are high artificial mounds, or hillocks, called Kurgani, which at a distance resemble small fortresses. Tradition reports, that in this place formerly stood the city of Shantgir,

Shantgir, the residence of a Temirgoyan Khan : hence the Temirgoyans and Circassians pretend to derive their origin. This fortification joins the rivulet Nefil in the West, and the Pfil in the East ; its diameter amounts to about three versts.

10. The Kudaka, on the banks of which are the villages inhabited by the descendants of the elder Nemer Primurfe, and Shupako Kasfo. In the vicinity of this river, where it flows from the mountains, are several springs producing the petroleum, or rock-oil on their surface.

The Natukhassians, the most powerful tribe of the Abassines, are on this side of the Caucasus. They dwell in the glens of the mountains, which are uniformly, though thinly, covered with wood : their agriculture consequently is of little importance ; but it is rather surprising that notwithstanding the beautiful pasturage, they do not pay more attention to the rearing of cattle. Continual feuds, and the natural propensity to depredations, are great obstacles to a regular domestic economy among these people. They are at war with all other tribes, the Sanintzes excepted, who dwell on their frontiers. The Natukhassians are indifferently dressed, and lead a wretched life ; they cultivate a small quantity of rye, and occasionally keep hogs, animals which are rarely met with among the other nations inhabiting this country.

The Kozaks of Nekrasov, who have deserted from the Taman, and now live in the vicinity of Anape, on the Turkish territory, exercise the right of fishing in the river Kuban under the protection of the Natukhassians, and carry the fruits of their industry to the market of Anape.

All the Abassines, or Abfne *, display a peculiar national character: their narrow faces, their laterally compressed heads, and their prominent noses, are as characteristic as the dark brown hair which is almost general among them. They appear to be the original inhabitants of the north-western part of the Caucasus, and to have formerly occupied more extensive countries, till they were driven into the mountains by the Circassians, who, by continual murder and extermination, have reduced them from a considerable to a small number. It is obvious, from the dictionaries of all languages, that their foreign dialect, except a few Circassian words, has not the most distant analogy to any European or Asiatic language; nay, it is certain that in the country beyond the mountains inhabited by other Abassinian tribes of the great Abassa, along the coast of the Black Sea, as far as Ikkuria, or the Dioscurias of the ancients, this original tongue is, with a few modifications of the dialect, the prevailing language. Even in remote ages, they seem to have been a predatory people, as it is highly probable that the piracies complained of by STRABO as proceeding from these countries, have been committed by the Abassines.

III. The warlike nation of the Circassians inhabit principally the promontory of the Caucasus, and extend themselves to the adjacent beautiful plain, from which they have expelled the

* The national name of this people is *Abfne*; in the Tartar, Circassian, and Russian dialects, it is pronounced *Abasa*; in the Georgian tongue *Abkhafete*. The six tribes of *Altekesek* are by the Circassians called Tabanta: to all the others they give the name of Kush-hafip, that is, people living beyond the mountains. — The countries of Mingrelia and Odishi are by the Abassines and Circassians termed *Dol*, while *Georgia* is called Gurgir.

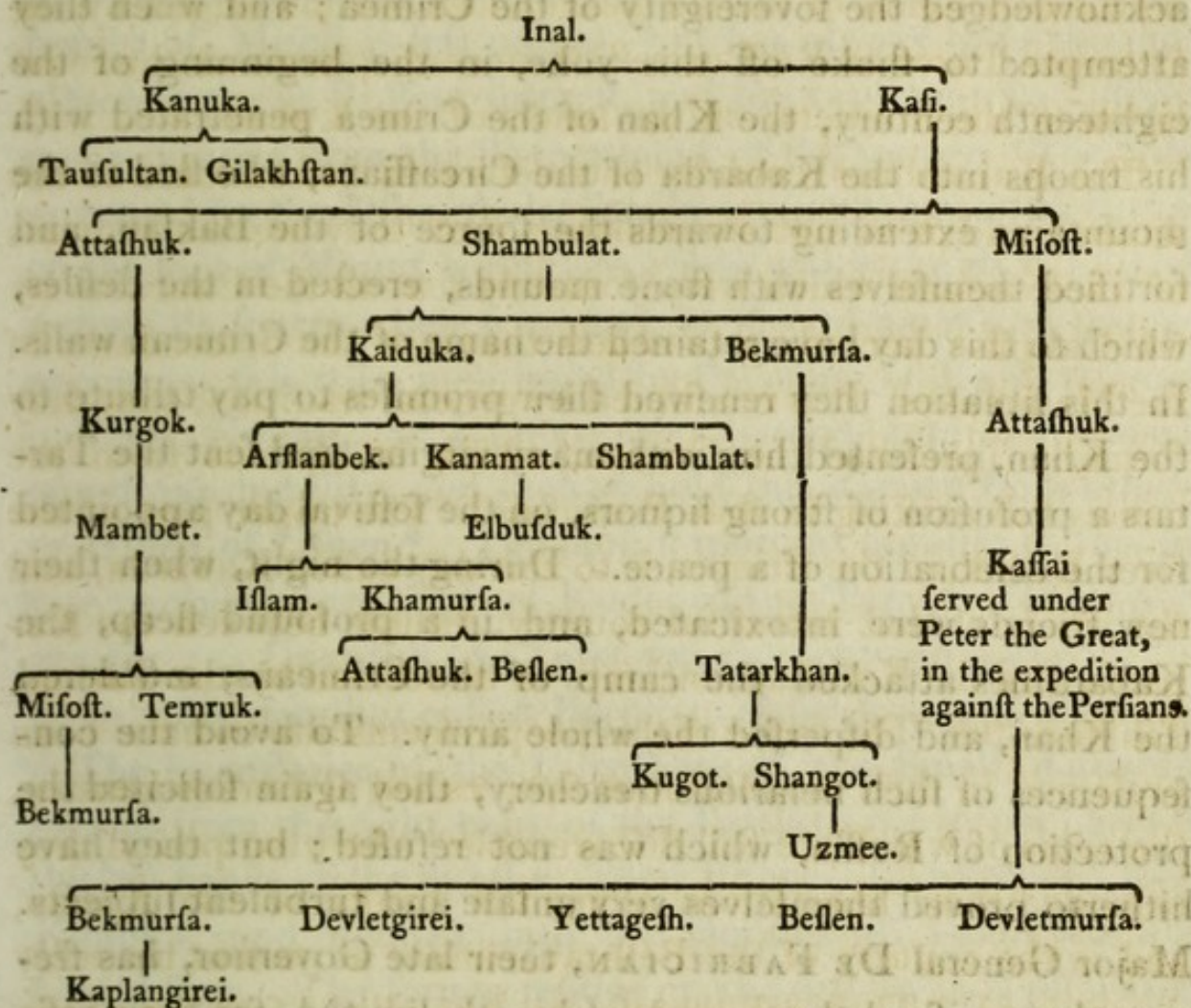
ancient inhabitants, and subjected the greater number to their dominion. They represent a species of knights, who observe a complete feudal system among themselves, as well as towards their subjects, not unlike that formerly exercised, though with still greater severity and cruelty, by the German knights in Prussia and Livonia. Considering the subject in this point of view, and admitting that the Princes and Nobility alone constitute the nation; that their subjects almost uniformly are the slaves of other nations subjugated by war, who, by adopting the language of their conquerors, have been treated with lenity, and that a free and gallant race of knights will not bear a foreign yoke without great reluctance, we shall then be enabled to judge with more candour and impartiality of their aristocratic constitution, as well as of their continual wars and revolts, not only against their former Khans of the Crimea, but also against their present masters. It is a fortunate circumstance, that their intestine feuds, and the divided power of this heroic people among a number of contending petty princes, render them less dangerous. Indeed, it were to be wished that they could be converted into good subjects, and somewhat more habituated to an orderly life, without curbing their bravery and heroic spirit: if such measures were adopted, we may confidently assert that their light cavalry would form the most determined and dreaded body of troops that ever appeared in a field of battle.

The branch of the nation most interesting to the historical inquirer, is usually called the Great and Little Kabarda; because they inhabit the frontiers of the Caucasus, and have, since the military cordon has been stationed on these mountains, alter-

nately maintained a friendly understanding and carried on bloody wars with Russia: at present, however, they are subjected to the sovereignty of that country; and have likewise, on the conclusion of the last peace, been acknowledged by the Ottoman Porte as Russian vassals, in consequence of the regulation of the frontiers, on the banks of the Kuban.

The Kabardines consider themselves as descendants of the Arabs; and it is not improbable that they are the remains of those armies which were formerly sent to the Caucasus by the Caliphs: according to others they are the descendants of the Mamelukes. It is confirmed by general tradition, that they formerly inhabited the Crimea, which is obvious from the names still existing in that Peninsula. The upper part of the river Belbik, in the Crimea, is to this day called Kabarda, and the whole of that beautiful country, situate between the Kabarda and the Kastscha, continues to be termed by the Tartars, Tsherkes-tus. The name of this people seems also to have been preserved in their mountainous fort, called Tsherkes-kermen, the ruins of which are still discoverable. At what period they extended their habitations along the banks of the Kuban, and in the country of the Beshtau, cannot at present be easily determined. They call themselves, like all the families of the Circassians, by the general name of Adigees: perhaps they are the *Cercetæ* of STRABO; or, if these should not have been their Aborigines, they may probably be the Tsherkesfates, who shall be mentioned in the sequel. It deserves to be remarked, that the families of the Circassian Princes considered Inal as their common ancestor, and described him as a mighty Khan, whose former residence was the city of Shantgir, now in ruins
between

between the rivulets Nepil and Pfif. From this Inal the Princes of the Great and Little Kabarda derive their genealogy in the following manner :



The genealogical history of these families is involved in much uncertainty. It is probable that they were first subject to the rulers of Georgia, together with a considerable part of the Caucasus. After the separation of the kingdom of Georgia, in the sixteenth century, and particularly after the defection of the provinces of Mingrelia, Guriel, and Abasa, they became subject to the Khan of the Crimea. In the same century they submitted

submitted to the protection of the Tzar Ivan Vassilievitch, who, about the year 1560, married Maria, a Circassian Princess, the daughter of Temruk. In the seventeenth century they again acknowledged the sovereignty of the Crimea; and when they attempted to shake off this yoke, in the beginning of the eighteenth century, the Khan of the Crimea penetrated with his troops into the Kabarda of the Circassians, who fled to the mountains extending towards the source of the Bakfan, and fortified themselves with stone mounds, erected in the defiles, which to this day have retained the name of the Crimean walls. In this situation they renewed their promises to pay tribute to the Khan, presented him with many virgins, and sent the Tartars a profusion of strong liquors, on the festival day appointed for the celebration of a peace. During the night, when their new friends were intoxicated, and in a profound sleep, the Kabardines attacked the camp of the Crimeans, murdered the Khan, and dispersed the whole army. To avoid the consequences of such nefarious treachery, they again solicited the protection of Russia, which was not refused; but they have hitherto proved themselves very unsafe and turbulent subjects. Major General DE FABRICIAN, their late Governor, has frequently punished them, and at length limited for their residence the country situated between the left bank of the Malk and the Terek. But these refractory settlers have lately again extended themselves to the banks of the Podkuma; while the most peaceful are those who live within the appointed boundary. About sixty years ago, these people professed the Christian religion, but since that time they have become indifferent and ignorant Mahometans.

Among

Among their Princes, the family of Attashuk, inhabiting the banks of the Bakfan, is at present the most powerful, and at the same time the most turbulent, not only in their conduct towards the relatives of their tribe, but also towards Russia. The family of Misost is less potent, but has always been the most attached to the Russian interest, and has consequently suffered many injuries from the ill-treatment of the former. The tribe governed by the Dshambulat family occupy the country situate on the foot of Mount Kashkatau, from which the river Tsherek derives its source; hence we find, in several maps and printed accounts, this tribe mentioned by the name of Kashkatovtzy.

Their Nobles, or Ufdens, are divided into the ancient equestrian nobility, and such as hold this dignity from others, or Ufden of Ufden *. The most important families of the ancient nobility, are those of Kudenet and Tambi. Their progenitor was Gnarduk; as Anfor was the common parent of the three noble families called Barukva, Safarukva, and Elmurfa.

The boundaries of the Circassians of the Small Kabarda, extend from the right bank of the Terek to the upper parts of the left banks of the Sunzhe. Their Princes are descended from Kanuka, and divided into the families of Taufultan and Gilakhstan. The former resides on the eastern part of Tatar-tup; but the villages of the latter, known by the names of Akhlov and Mudarov Kabak, are situate near the horizontal mountains over which the road leads to Georgia.

* A Prince is in the Circassian dialect called Pshi; in the Tartar language Bei, or By: a nobleman among the Circassians is called Uork; and among the Tartars, Ufden. A peasant, or boor, is by the former termed Hokotl; by the latter, Tshagar.

The Circassians in general, and particularly the Kabardines, dwell in villages which, partly on account of the increasing uncleanness, partly from the insufficient security they afford, and other causes, are from time to time deserted. On such occasions they demolish their habitations, carry off the timber, together with their household furniture, and burn what they cannot remove. Their attention is next directed to the choice of another convenient situation for erecting a new village. If they happen to settle at some distance from water, their ingenuity enables them to form a canal which they conduct from the next rivulet, by means of small banks; a practice in which they are as expert as the Tartars of the Crimea. Their houses are built contiguous to each other, either in the form of circles or squares, so that the inner space serves as a common large cattle yard, provided with only one gate, while it is altogether inclosed, and as it were defended by the circumjacent houses. The residence of the Usden stands usually detached from these circles, and consists of several apartments. Small solitary houses, or rather square rooms, about two fathoms wide, are here and there built for the accommodation of visitors, with a chimney, a small divan, and every other convenience. They likewise occasionally erect, in the open fields, round huts of wicker-work, containing a pit which is used as a place of retreat. In the vicinity of the village are placed stacks of hay and corn, provided with a fence; they sometimes manufacture large baskets, which are fixed on the ground and secured with covers, wherein they preserve their corn after it is threshed.

The

The houses of the Circassians are built in the form of oblong squares, from four to five fathoms in length, and seldom above nine feet broad: the walls are made of close wicker-work, and on both sides carefully plastered with clay. On the posts supporting the walls, they place a flat roof of light rafters, which is covered with long grafs. The whole dwelling consists of a large room appropriated to the mistress of the house, and a small apartment for the female slaves and girls. The principal room is provided with a door on the right-hand corner leading to the street, and another on the left corner leading to the inner yard. In the interior part of the house, against the front wall, there is a chimney made of plastered wicker-work, with a capacious fire-place and a short flue. On that end of the room which leads to the yard, we observed a broad couch, or divan, with carved balusters, excellent carpets, and bolsters: in a collateral direction was a window towards the street, which occasionally served as an entrance to the room. Above the sofa, and on the whole wall around it, were suspended on pegs and poles various implements of female economy, such as articles of needle-work, apparel, and furs: on transverse poles, below the roof, was placed the store of Turkey wheat in full ears, which they roast in hot ashes, and collect the grains, separated from the ears by heat, for immediate use, and likewise to preserve them for warlike expeditions; as these grains, together with a species of cheese made of millet, afford on such occasions their principal and portable food. — The husband generally lives in a separate apartment, and is not very fond of making his appearance before his wife, when she receives the visits of strangers.

The Circassians are upon the whole a handsome race of people. The men, especially among the higher classes, are mostly of a tall stature, thin form, but Herculean structure; they are very slender about the loins, have a small foot, and uncommon strength in the arms. They possess in general a truly Roman and martial appearance, yet there are still some traces left, from which it is obvious that they are descended from mothers belonging to the tribe of the Nagais. The women are indeed not uniformly Circassian beauties, but are for the most part well formed, have a white skin, dark brown or black hair, and regular features: I have however met with a greater number of beauties among them, than in any other unpolished nation.

In their villages and houses the Circassians are extremely clean; and this domestic virtue they likewise display in their food and dress. It would be superfluous to add a particular description of their usual garments, as they may be distinctly seen in the well-executed eighteenth plate. This engraving represents a Circassian nobleman in his ordinary domestic dress, and the daughter of a Circassian Prince, in a similar apparel. Their females dress in an uniform style, till they are delivered of the first child, after which they begin to cover the head with a white handkerchief, drawn close over the forehead, and fastened below the chin. It is a custom perhaps not generally known, that their girls, between the tenth and twelfth year of their age, are provided with laced stays, or a broad girdle made of untanned leather: this singular coat of mail is among the common people tightly sewed round the waist, but in the higher classes it is fastened with silver books, so that they are obliged to wear





wear it till their wedding-night, when the bridegroom, with a sharp-cutting dagger, unties this gordian knot, which ceremony is frequently attended with danger. Over the shift, the girls wear a laced jacket, because the petticoat, which reaches to the ancles, is open along the whole front, and resembles that of a man; but married women dress in wide breeches. Besides the girdle of chastity above mentioned, there is another circumstance which contributes to preserve the elegant shape of the girls: they are sparingly nourished, their whole allowance consisting simply of a little milk and pastry. According to the ideas of beauty prevailing among the Circassians, as well as the Turks, a woman ought to have a very narrow waist, and the abdomen should protrude toward the lower extremities. When females are obliged to leave the house, they wear a species of wooden clogs, to preserve their feet clean, and at the same time make use of mittens on their tender hands. Painting the face is considered here as an indication of the want of chastity; but girls are permitted to dye the nails of their fingers with the flowers of the *Balsamina*, which in their language is called *Kna*. Their head-dress consists of a cap, nearly resembling that worn by the men: under this ornament the hair is turned up in a thick queue, which is covered with linen.

It is a practice among the Circassians, to compress the waist from early infancy as much as possible, by means of straps, on which the sabre is suspended: hence they are in general uncommonly thin between the loins and the breast. I have also uniformly remarked, that their feet are of an extraordinary small size, because they force them in the tightest manner within

within their Morocco slippers, which give them the appearance of dancers. The male dress is light, neat, and becoming; and, in many respects, resembles that of the Tartars, but is of a more elegant shape. The upper garment is regularly furnished with a small embroidered pocket, on each side of the breast, for containing cartridges. On the head, which is shorn in the Polish fashion, they wear an embroidered cap quilted with cotton, in the form of a melon, but occasionally lower, and ornamented with various gold and silver laces, especially among the wealthy: the whiskers are likewise suffered to grow, as is common among the Poles. Above the lower dress, which is made of light stuff, persons of distinction sometimes wear a short, rich waistcoat, as it were to supply the place of armour, either with or without a great-coat. The upper dress, consisting either of cloth or other strong woven stuff, is somewhat shorter than the under garment, while the sleeves are slit open, and frequently bordered with furs. The breeches are provided with knee-straps, and the seams are bound with small lace or embroidery, which the women very skilfully manufacture of gold and silver threads. When a Prince, or Ufden, pays a visit in full dress, he arrays himself with all his accoutrements and coat of arms, above which he occasionally has an additional jacket of mail, as is represented in the nineteenth plate. These coats of mail are manufactured of polished steel rings, and imported partly from Persia, and partly from Kubefha, to the nations inhabiting the Caucasian mountains. The helmet, and the arm-plates, from the former of which a net of ringlets hangs down as far as the shoulders, are manufactured of polished steel. In the girdle
multiw
they



they usually carry their dagger and pistols, while the bow and quiver are tied by straps round the hips. In common visits, the coat of mail is worn below the upper dress, and on this occasion they arm themselves only with a sabre, and cover the head with an ordinary cap.

The twentieth Plate represents a Circassian on horseback, in his complete armour. — It is by no means uncommon to see Circassians of the lower class walking in the fields, dressed in their shaggy felt cloaks, called Burki, even in the warm days of summer. When they do not carry a sabre with other arms, they provide themselves with a strong staff, two arshines long, on the top of which is fixed a large iron head, and the lower end is furnished with a sharp iron pike, about eighteen inches long, which they are accustomed to throw expertly like a dart. Persons of wealth and rank never leave the house without a sabre; nor do they venture beyond the limits of the village, without being completely arrayed, and having their breast-pockets supplied with ball cartridges.

Their clergy and the learned let the whole beard grow; the former generally wear a deep red turban, and scarlet breeches somewhat longer than those of the latter. Although the Circassians are ignorant and only nominal Mahometans, yet the few priests among them are highly respected. When they first submitted to the Russian sceptre, a small degree of zeal would have been sufficient to convert them to Christianity.

The Princes and Knights pursue no other business, or recreation, than war, pillage, and the amusements of the chase; they live a lordly life, wander about, meet at drinking parties, and undertake military excursions. The Ufdens, or Knights, keep the lower classes of people in proper subordina-

tion, pay no duties to the Prince, but are obliged to render personal services in war. Vassals, or boors, are considered as hereditary property, while they observe implicit obedience to the Princes and Nobles, insomuch that their lives and possessions are entirely at the disposal of the former: there is, however, no instance of their persons having been sold for bondage. These vassals, and the slaves made by Princes and Ufens during their wars, constitute the majority of the common people: they conjointly till the land with large ploughs, drawn by six or eight oxen; they attend to the pasturage of their flocks, carry the necessary timber and fuel from the forest, build houses, get in the harvest, and make hay, which during winter is foddered on the spot. Their wives and adult girls likewise assist at the harvest, and are in general not so confined and reserved in their conduct as those among the Tartars of the Crimea. When, on such occasions, the Circassians remove to some distance from the villages, they immediately construct huts, by joining poles which they cover with branches of trees and long grass, so that they almost resemble hay-stacks. Their Princes encamp in similar huts, when, in their excursions, they are obliged to be stationary for a length of time. In their constant expeditions and equestrian rambles they erect small huts, by means of four poles fixed perpendicularly, and connected by rafters which form the roof, and are covered with felt, so as to serve them instead of tents.

Among the boors, or peasants, each male is obliged to work three days at hay-making, either for the Prince or the Nobleman, to cut wood in the forest for three days, to carry both the hay and wood to their habitations, and to deliver for every bullock

bullock a cart-load, or seven sacks, of millet. A bridegroom of this class is compelled to give his lord of the manor two cows and two oxen for obtaining his consent to marry. But the inhabitants of the mountain, such as the Abassines, Offetines, Dugores, Bassianes, Balkares, Karatshaies, and Karabulakes, whom the Circassian Princes have made tributary, give, in general, for each family, only one sheep, or its value in felts, felt cloaks, cloth, copper vessels, and the like. Every boor who possesses sheep, whether his flock be large or small, is obliged, during the encampment in summer, to contribute one sheep to the Prince's household, who is thus enabled to preserve continual hospitality.

Although the Prince is not restrained by any positive laws, he considers it as his interest to gain the affection and fidelity of his subjects in war, by a liberal and benevolent conduct. He has the privilege of raising a vassal to the dignity of an Ufden, or of ennobling him when he is deserving of that honour; but he has also the arbitrary power of depriving him of every thing he possesses. On important occasions, he assembles the Nobles; and by these the resolutions agreed upon are communicated to the people.

It is difficult to ascertain the accurate amount of the population of the Circassians; but if it be admitted that the subjects of the line of Attashuka form about a third part of the horde or Kabarda, and that this line consists of rather more than three thousand boors and five hundred Ufdens, it follows that the Kabardines can bring into the field about ten thousand privates and fifteen hundred Ufdens. If to this number we add the different tribes inhabiting the country beyond the

Kuban, of which an account shall be subsequently given, they will form a very considerable body of men, who, from their warlike and gallant disposition, might become very dangerous to the neighbouring powers, if they were not divided among so many Princes that are almost continually embroiled in quarrels. According to their feudal constitution, every man who is capable of bearing arms, especially a Nobleman, is bound in duty to follow the Prince into the field; as cowardice is among them punished with extreme contempt.

The two opposite customary laws, namely, those of hospitality and revenge, are sacredly observed among the Circassian Knights, as well as among most other nations of the Caucasus. The right of hospitality, which they term *Kunak*, is established on certain principles; and every person submitting to its protection is perfectly secure from all injuries. He who befriends a stranger, defends him, if occasion require it, not only with his own blood and life, but also with that of his relatives; nor does he suffer him to depart without an equestrian escort, and delivers him over to his next confederates, under such conditions that a murder or injury committed on the guest is avenged with equal severity as the death of a relation by consanguinity. A stranger who intrusts himself to the patronage of a woman, or is able to touch with his mouth the breast of a wife, is spared and protected as a relation of the blood, though he were the enemy, nay even the murderer of a similar relative.

The opposite conduct, or bloody revenge, is practised with the most scrupulous adherence to custom. The murder of a family relation must be avenged by the next heir, though he should be an infant at the time when the deed was committed: every

every degree of vindictive malice is exercised sooner or later, whether publicly or in a clandestine manner, to take away the life of the murderer; lest the injured party should be considered as an outcast of society. — Nay, this desire of revenge is hereditary in the successors and the whole tribe; it remains as it were rooted with so much rancour, that the hostile Princes or Nobles of two different tribes, when they meet each other on the road, or accidentally in another place, are compelled to fight for their lives; unless they have given previous notice to each other, and bound themselves to pursue a different route. Among the Circassians the spirit of resentment is so great, that all the relations of the murderer are considered as guilty. This customary infatuation to avenge the blood of relatives, generates most of the feuds, and occasions great bloodshed among all the nations of the Caucasus; for, unless pardon be purchased, or obtained by intermarriage between the two families, the principle of revenge is propagated to all succeeding generations. The hatred which the mountainous nations evince against the Russians, in a great measure arises from the same source: if the thirst of vengeance is quenched by a price paid to the family of the deceased, this tribute is called *Thlil-Uafa*, or the price of blood: but neither Princes nor *Ufdens* accept of such a compensation; as it is an established law among them, to demand blood for blood.

In their amusements, the youth of both sexes freely converse with each other, as the Circassian women in general are neither confined nor reserved. Yet in their courtships every attention is paid to the rank of the parties. No *Ufden* dares to court the daughter of a Prince; and, if such an amour should ever take

place, or the Princess be seduced by an Ufden, the presumptuous lover, on the first occasion, forfeits his life without mercy. If the son or daughter of a family enter into the state of wedlock, they have no right to appear before their parents during the first twelvemonth, or till the birth of a child. During this period, the husband continues secretly to visit his young wife through the window of the room; but is never present when she is visited by strangers: this affected politeness is carried to such an extent, that the husband is even displeased to hear others speak of his wife and children, and considers it as an insult if inquiries be made after the welfare of his spouse. The father does not give his daughter her full marriage-portion, till after the birth of her first child; on this occasion he pays her a visit, takes off the cap she wore when a virgin, and with his own hands covers her with a veil, which from that period becomes her constant head-dress.

The education of the children of the Circassian Princes is of such a nature as to suppress, from the earliest infancy, every feeling peculiar to consanguinity. Their sons and daughters are, immediately after birth, intrusted to the care of a Nobleman, who is frequently none of the most wealthy; and the parents, especially the father, has no desire to see his son till he is an adult and capable of bearing arms; while no notice is taken of the girls, till after marriage. The tutor of the Prince is obliged to take upon him the whole charge of his education: he instructs the youth, during his adolescence, in all the schemes of robbery, which are held in great estimation among these equestrian Knights; he provides him with arms, as soon as he is strong enough to wield them, and in such array he is presented

to his father. The grateful pupil rewards his foster-father for the pains he has taken to qualify him in the predatory arts, by giving him the greatest share of the booty he is able to obtain.

The female children are nourished in the most sparing and wretched manner, that they may acquire a slender and elegant form ; because such a stature is considered as an essential requisite to a Circassian Princess. They are trained to all ornamental work in the domestic economy of females, especially to embroidery, weaving of fringe, sewing of dresses, as well as the plaiting of straw mats and baskets. The Nobleman intrusted with their education is also obliged to procure for his princely foster-daughter a husband of an equal rank, in default of which he is punished with the loss of his head.

The singular customs prevailing among the higher classes of the Circassians, who behave with such reserve towards their wives, live as it were separate from them, and suffer their children to be educated by strangers, all bear an obvious analogy to those related by STRABO, in his second book, respecting the community that subsisted between the Gargarenfes and the Amazons. His account of the last-mentioned people cannot be applied to any nation of the Caucasus, more aptly than to the Circassians ; provided it could only be proved, that they were the original inhabitants of these mountains, or that they had in later times been mixed with the nations alluded to by Strabo. It is evident that the river Terek formerly flowed in a northerly direction, and emptied itself into that part of the Caspian Sea, which was then connected with the Sea of Azof, and that its mouth must have been

been in the vicinity of Beshtamak, about those regions where the five rivers, Urukh, Ttherek, Tthehem, Bakfan, and Malk, successively join the Terek: as, farther, the last-mentioned river, in the higher parts of the country, receives the rivulet Mermedik, we may rationally conjecture that this is the *Mermotas*, or *Mermotalis* of Strabo, which separated the ancient Amazons from the people called Geles, perhaps Galgai, as well as the Leges, or Lesges *. It might also be conjectured, with some degree of probability, that the Amazons, after having been conquered by the wandering Circassian Knights, had preserved some of their original customs. The latter were unquestionably such a horde of knight-errants, as had by the force of their arms primarily acquired a nation of vassals, who gradually adopted the language of their conquerors: an illustration, tending to confirm this opinion, occurs in the conquest of the Livonians by their German masters, whose language was consequently introduced into that country. Nay, it is probable, that the Circassian bears no affinity to any other language, and that it has originally been a species of gibberish; for it is reported that their Princes and Ufdens speak a peculiar

* STRABON. GEOGR. lib. XI. Amazones alii, atque inter hos Metrodorus Scepsius et Hypsicrates, ne ipsi quidem locorum ignari, Gargarensis confines eas habitasse asserunt in radicibus Caucasiorum montium septentrioni obversorum, quæ Ceraunia dicuntur. — Duos autem veris menses habere eas eximios, quibus adscendant in montem vicinum: eas a Gargarensis dividentes. Hos quoque adscendere tum, vetere quodam instituto, ibique una peractis sacrificiis cum Amazonibus corpora eos miscere prolis procreandæ causa: idque in occulto, et promiscue quemvis cum quavis ut casus obtulit. Postquam prægnantes fecerunt, domum eas dimittere. Has si femellam pariunt, ipsas enutrire: si marem, illis educandum mittere. — *Mermotas autem e montibus per Amazones se præcipitans et per Siracenam, ac deserta in medio sita, in Maotidem effluit.*

dialect, which is kept secret from the common people, and used chiefly in their predatory expeditions.

During our stay in the camp, on the banks of the Bakfan, I had an opportunity of seeing the national dance of the Circassians performed with much agility, by one of their young Princes. Several natives placed themselves in a row, and beat the time, by clapping their hands, and incessantly repeating the syllables $\bar{A}-\bar{r}\bar{i}-\bar{r}\bar{a}-\bar{r}\bar{i}-\bar{r}\bar{a}$, the two last of which were chanted a tone deeper, and continually in two divisions of time. The dancer stood in an opposite direction, but his motions were confined to the spot; holding up his long garment behind with both hands, and frequently bending his body rather low, in order to watch the movements of his feet: with these he made every possible inflexion and figure, according to musical time, much resembling the national dance of the Scotch, while he skipped about in a triangle, with his toes almost perpendicular; a performance which must have been the more difficult, as the slippers he wore were not provided with stiff soles. The juvenile dancer, at the same time, shouted in a plaintive voice, as if he underwent severe flagellation.

The principal tombs of these people are erected of hewn stones, and form an oblong square, either solid or hollow: the corners are usually ornamented with head figures of wood. These monuments are generally met with in the vicinity of villages, and in more or less conspicuous situations. The Princes and Ufdens have much larger sepulchral buildings of a hexagonal, heptagonal, or octagonal form; and sometimes even regular chapels, such as are represented in the seventh Vignette: they

they are built of stone hewn by masons who come from the mountains for that purpose.

The sepulchres of the Circassians generally resemble those of the Abassines. When the head of a family dies, the surviving widow is obliged to scratch her face and breast till the blood issues, as a token of the great affliction occasioned by the loss of her husband. The men, on a similar event, strike their faces with a whip, in order to produce black spots, which they exhibit for a considerable time, as expressive of their grief.

With respect to the rural and domestic economy of the Circassians, it deserves to be remarked, that they not only cultivate the ground, but likewise devote a considerable portion of their time to the rearing of cattle. Their principal species of grain is millet, of which they make cakes, hasty puddings, and prepare various kinds of pastry, as well as their common beverage, by the natives called *Hantkups*, and by the Kozaks of the Terek, *Yantzokh*. Maize, or Turkey wheat, is also much cultivated, and used as a substitute for other food, when on their journies and military expeditions. Several culinary vegetables, such as carrots, turnips, the turnip-rooted cabbage, onions, gourds, and water-melons, are likewise planted in gardens. The women manufacture a very strong thread of wild hemp, but they are not acquainted with the art of weaving linen.

The cattle of this people consist chiefly of goats, sheep, oxen, cows, and horses. Their sheep are generally an excellent race, of a white colour, have long tails, and produce a fine wool, which is carried to market, as well as a quantity of very good but narrow and undyed cloth, woven by the women : of such cloth
are

are manufactured entire upper dresses for sale in the market ; while the black and coarser species of wool is used for felt-cloaks.

Their horned cattle is of a small size, and employed chiefly in drawing two-wheeled carts, here called Arbes : they walk with agility over eminences and hills, and in this respect resemble the oxen bred on the mountains of the Crimea, which are not so heavy and slow as the large cattle of the Ukraine, but travel upon a quick trot.

It may be easily conjectured, that the most important object of attention among these predatory knights, is the rearing of fine horses ; a business which is pursued with a degree of zeal and attention, not inferior to that evinced by the Arabs. But the Circassians endeavour to breed not only beautiful, but at the same time strong and durable animals, which are capable of undergoing hunger and fatigue, and also excel in swiftness ; as the success of their military enterprises depends on the superior quality of their horses. Almost every family of distinction, whether of Princes or Nobles, boasts of possessing a peculiar race of horses, which, when young, are burned on the buttock with a particular mark : on this occasion they act with the most scrupulous adherence to custom, so that a person who should attempt to burn a character expressing noble descent on a filly of a common race, would for such forgery forfeit his life. The most celebrated race of Circassian horses has received the name of *Shalokh*, and is in the exclusive possession of the Taufultan family : this race is peculiarly valuable for its durability, strength, and swiftness, more than for its superior beauty ; its distinguishing mark is a full horse-shoe, without an arrow.

On the twenty-first plate here annexed, which contains the different characters of the most renowned races of Circassian and Abassinian horses, I have prefixed a delineation of the shoe above alluded to, as well as the mark imprinted on the breed of the *Shalokh*.—The horses of *Tramkt* and *Lof*, among the Abassines, and those of *Misaoft* in the great Kabarda, are also highly valued, as well as the Persian race termed *Tshepalau*; besides several others, the names and characters of which may be inspected in the Plate before mentioned.

The Circassians also rear poultry of almost every species, such as chickens, geese, ducks, and especially Indian fowls, of a peculiar size and beauty. They bestow considerable attention to the cultivation of bees, on account of the intoxicating quality of the mead, which is their favourite beverage. The bees are kept in hives placed on stocks, and carried along with them, as they remove and change their habitations. On the tenth Vignette, the reader will find a representation of a Circassian, as well as an Ingushian bee-hive. The latter fix the hives, with proper stocks, between the branches of low trees and bushes, in order to secure the bees from vermin. The excellent honey which they produce, is partly made into mead after having been diluted with boiling water, partly used with a fermented liquor made of millet, and called *Busa*, and partly consumed at the table. Considerable quantities of this delicious production, together with the bees-wax, are likewise sold on the frontiers of the Caucasus, and the traffic is carried on with these articles, even as far as the city of Astrakhan.

We shall now take a view of the other Circassian tribes which inhabit the country beyond the river Kuban, and consequently

		 a	 b	 c	 d
		 e	 f	 g	 h
 i	 k	 l	 m	 n	 o
 p	 q	 r	 s	 t	 u
 v	 w	 x	 y	 z	 a.2
 b.2	 c.2	 d.2	 e.2	 f.2	 g.2
 h.2	 i.2	 k.2	 l.2	 m.2	 n.2
 o.2	 p.2	 q.2	 r.2	 s.2	 t.2
 u.2	 v.2	 w.2	 x.2	 y.2	 z.2
 a.3	 b.3	 c.3	 d.3	 e.3	 f.3

are not included within the boundaries, appointed at the conclusion of the last peace with the Ottoman Porte.

The next tribe is that of Beslene: they dwell near the source of the Laba, where this river issues from the high mountains, and their habitations extend downwards as far as the Khots which falls into the Laba at its left bank, and thence up to the source of the Psefir, which flows into the Yamanffu, on its right bank. Here the country of the Beslenians borders on that of the Mukhoshians: they are the same tribe as the little Kabarda, and acknowledge Kanuka to be the common ancestor of their Princes. In their manners and customs, they resemble the Circassians, but are more cleanly and wealthy than the people of the mountains.

The country bordering on the foot of the woody and black mountains is inhabited by the Mukhoshian tribe. Several small rivulets issue from those mountains, and flow through a fertile country into the Yamanffu. In a direction from East to West, the Mukhoshians occupy the banks of the following rivulets:

1. The Shimblonakhe and Shograg, both of which, after uniting, fall into the Laba at its left bank. In this vicinity they principally rear cattle and cultivate bees.
2. The Psefir, on the banks of which are situated the villages of Merberi and Kurgukau.
3. The Psekhush, on which are the three villages called Nederbi, the property of a Nobleman of that name, under the sovereignty of Prince Salatgirei Bagarfukof.—These three rivulets, after uniting with each other at different places, fall into the Yamanffu.

4. The Pharfe, or Yamanffu Sofurakai, on the banks of which are likewise built three villages.
5. The Ponako, which flows into the Yamanffu on its left bank : here are situated the villages called Dlebugai.
6. The Kalkh, which likewise unites with the Yamanffu, and on its banks are the villages of Bierhabel and Deshuka, belonging to the above-mentioned Prince of Salatgirei.
7. The Arim, which falls into the Bulanffu on the right bank, and with the villages called Labugai, forms the western frontier of the Mukhofhians.

These people are much devoted to agriculture, are wealthy in cattle, and live in fortified villages.

The next tribe is that of Temirgoi, the most populous and powerful of all the Circassian tribes. They border with the Mukhofhians near the rivulet Arim, on the banks of which, below Labugai, is situated the village of Tsherikhai, belonging to these people. Its inhabitants are Egerekois, and subject to the Princes of Arslangirei and Attashuk Eitek. The latter also possesses the Egerekois village of Ratafai, situate on the banks of the Bulanffu, which falls into the Laba, as well as the villages of Minbulatai, Pfinaok and Gauerhabl, built on the banks of the Shaugvafho, or Shaukesha ; this last-mentioned place is inhabited by wealthy Armenians. There are several other villages of the Temirgois on the banks of the Shaukesha, a river similar to the Laba, and issuing like it from the extremity of the snowy mountains. Immediately behind its source, the highest mountainous ridge extends more in a south western direction, and terminates towards the Black Sea; while the black mountains,

tains, covered with immense forests, and inhabited by Abassines, expand rather to the North-west, as far as the vicinity of Anape.

The river Shaukesha has a high bank on its left side, but a low bank on the right: it is bordered with forests in every direction; and traverses a country uncommonly favourable to agriculture, as well as to the rearing of cattle, till at length it falls into the Kuban, thirty versts below the Laba.

Lastly, the rivulet Psega, or Pshaba, forms the boundary of the Temirgois, and on its banks are situated the three villages called Khakemsi, belonging to a Nobleman of the name of Khakemis, and three other villages called Ademier Neshukhai, all of which are under the dominion of Prince Eitek. This rivulet likewise issues from the snowy mountains, and runs into the Shaukesha, at its left bank.

The whole tribe of the Temirgois occupies more than forty villages, and is able to bring into the field upwards of two thousand men: the tribes of Beslene, Mukhosh, and Pshedukh, are their allies, and when united they possess a power of at least five thousand effective men. The Temirgois are a wealthy people, and the most cleanly of all the Circassians. Their villages are uniformly fortified: thick poles are transversely placed, in a reclining direction, the lower spaces between which are filled up, but the upper part is covered with thorn-bushes; a contrivance which affords them an impenetrable fortification against their enemies, the Abassine tribes of Tubi and Ubikh, who reside in the mountains, and with whom they are frequently at war.

There

There is a family among the Temirgois, named Ademi, who inhabit several villages on the banks of the Pſega, and others on thoſe of the Pſiſhe.

The fourth of the principal tribes of the Circaſſians is that of the Pſhedukhs *. They inhabit the banks of the following rivers and rivulets :

1. The Pſiſhe, on which are ſituated the villages of Karagus, belonging to a Nobleman of that name, and the village Edepfukhai, the property of the Uſden Batuk.
2. The Matte, on which are the villages of Gubukai, and Netukhai, or Neſhukai, poſſeſſed by the Uſden Neſhukh.
3. The Shakups, near which are built the villages of Lakthukai, Khatugui, and Mamrukai, all belonging to Prince Khamiſh : the three rivulets now mentioned ſucceſſively fall into the Kuban.
4. The Unabat, with the villages of Sugurgoi, ſo called after the proprietor, a Nobleman of that name.
5. The Tſhebi, near which are the villages of Shirgi and Turgoi, in the poſſeſſion of Prince Khamiſh.
6. The Sup, on the banks of which is ſituated the village of Yuem.

Among the Pſhedukhs there is a family of the name of Abaſekh : the people of this tribe purſue agriculture, and have likewiſe a few herds of cattle on the right bank of the Kuban,

* Perhaps theſe are the *Skeptukhi* of Strabo, who, according to his account, lived near the Boſphorus.

but are more addicted to robbery than their neighbours, with whom they are frequently involved in broils. Sultan Tshobangirei, who is descended from the Khans of the Crimea, resides among these people, and possesses a few subjects. — The mountains in this neighbourhood are only thirty versts distant from the river Kuban, and are covered with considerable forests.

The fifth of the Circassian tribes, namely that of Hattukai, is at present under the dominion of the Ottoman Porte. Their habitations are established in the following countries :

1. In the vicinity of the Kara-Kuban which the Circassians call Afips ; on the banks of which are situated the villages of Betzi, and lower down the village of Padise, belonging to a Nobleman of that name. The Kara-Kuban is a considerable river, and cannot be passed over without boats, especially when it is swollen by the snow and rain-waters. It falls into the Kuban on its left bank ; and after this junction the main river runs between low banks, and inundates, in spring, an extensive valley from five to six versts broad, on its left side, where it forms morasses extending to its very mouth.
2. On the rivulet Ubin, which, near Padise, falls into the Kara-Kuban : on its banks is situated the village Ptzukhakhai.
3. On the banks of the Gill, or Ill, where Prince Sheretuk possesses several villages called after his name, and where likewise are others called Hattukai.
4. Near the Afips, or Afhips, on the banks of which are the villages of Saubai, being the property of an Usden of that name.

The

The Hattukais inhabit the country extending from the foot of the black mountains to the fens of the Kuban, the southern side of which is surrounded by the river Yamanffu. There likewise resides among them a Sultan of the Crimean family, called Bakhti-girei, who has considerable influence over their national affairs, though he possesses only a few vassals.

Another small branch of the Circassians deserves to be mentioned : it is known by the name of Shani, or Sani, and consists of only six villages ; four of these are situated on the banks of the Attakum, and two below on the shore of a small lake. They formerly occupied the right bank of the Kuban, above Kopyl, but fled, together with the inhabitants of Taman, to the left bank of that river, on the approach of the Russian troops in the year 1778. They are governed by a Prince Misoft Melikirei Sana, are able to bring two hundred men well armed into the field, cultivate the soil, and likewise attend to the rearing of cattle, but are poorer than the other Circassian tribes, and reputed to be great robbers.

Lastly, we ought not to pass over in silence another, though very insignificant Circassian tribe, called Shagaki, who inhabit the vicinity of Anape, on the banks of the river Bugur and its small collateral branches. Their former habitations were on the spot where Anape now stands, but their number has been much reduced, partly by the attacks of the Natukhians, and partly by the ravages of the plague, so that a few only now remain. They are governed by Prince Mametgirei-Sane, who formerly carried on commerce, maintained his own ships in the Black Sea, and possessed considerable wealth. On account of his influence over the people living in the neighbourhood of
Anape,

Anape, he is treated with respect by the Ottoman Porte. I was informed, that at the conquest of Anape a large white marble plate, with an elegant Greek inscription, was found in his bath, in the village of Ttherakee, situated six versts above the mouth of the Bugur. Although I had commissioned a Greek gentleman, who travelled from Taurida to Anape, to procure a copy of this inscription, yet as he met with the plate in a mutilated state, I could obtain only a part of the characters engraved on this monument, which consisted of a number of Greek names, without expressing the occasion on which they were recorded.

Anape is a fortress which was built by the Turks twelve years ago, when Russia took possession of the Crimea, together with the isle of Taman: it afforded protection to the fugitive inhabitants of Taman, and the wandering Nagais on the banks of the Kuban. The fort stands on a projecting part of the mountains, called Kyfilkaya, the base of which, towards the sea-coast, terminates in a plain three versts long. This point of the shore is, from North to South, intersected by a fortification which consists of a wall and ditch, with three entire and two semi-bastions, measuring six hundred and fifty fathoms in length. As the extent of the fortification on the sea-side is no less than eight hundred and fifty fathoms, the whole circumference of Anape consequently is three Russian versts. Its southern and western side is fortified by Nature with calcareous perpendicular rocks, upwards of thirty fathoms high: close to the shore, the sea is several hundred fathoms deep, and presents various clefts of lime-stone. Towards the North and North-west the shore declines, and amounts scarcely to half its former

former height: the access by land is from the northern extremity, towards which quarter the sea is shallow, and contains several sand-banks.

A little farther to the South of Anape is situated the small fort Sutshuk-Kale. It is an old castle, with four angular bastions of about an hundred fathoms extent in each flank, and its walls are built of regular bricks. The harbour contiguous to its southern side is five versts long by three broad, and defended on that side by lofty and steep mountains. By land this fort is only thirty-five versts distant from Anape, and is still nearer by sea. When that fortress was taken by General Gudovitch, during the last war with the Turks, the Russians also possessed themselves of this post with no great difficulty. Both might have been of the first importance to Russia, on account of their excellent situation to check the incursions of the mountaineers; but they have been restored to the Porte.

The former inhabitants of the isle of Taman, who fled thence on the conquest of the Crimea by the Russians, were for the most part of Circassian origin. They migrated to the left bank of the Kuban, and have established themselves along the Liman, in villages which retain the name of Adale. The fortress of Anape is chiefly garrisoned by some of those fugitives; because many of them were killed when it was taken by the Russians, others were dispersed, and a few only have returned. Their principal employment is fishing, consequently agriculture and gardening are but little attended to. They generally live under felt tents, or in huts miserably constructed.

On the banks of the Shukups are situated the villages called Shukan, the property of Sultan Batirgirei, a descendant of the Crimean Khans. His son Selimgirei was educated in Russia, and

and rose to the rank of a Brigadier; but, notwithstanding his promotion, he decamped from Georgiefsk, and resides at present in this neighbourhood.

IV. The next people I propose to describe are the Nagais, or the Tartars of the Kuban, who dwell among the Circassians, as well as in their vicinity, and generally lead a pastoral life. They are the remainder of the Mongolian Tartars, formerly a powerful people, who, after the reign of Tshingis-Khan, invaded and governed part of Asia, as well as Europe; but have, during the last century, been so much reduced by the vicissitudes of war, and their turbulent conduct, that they at present scarcely deserve the name of a nation. When the last of their governments in Europe, namely that of Astrakhan, was conquered by Russia, the Ulussians, who formed a part of this empire, migrated to the desert situated between the river Kuban and the Sea of Azof, where they for some time committed their usual ravages. But their new rulers, the Khans of the Crimea, thought proper to remove them to the steppes in the vicinity of the rivers Dniepr, Bog, and Dniestr: during the last war, however, they again submitted to the Russian protection, and were suffered to return to their former pastoral habitations, on the banks of the Kuban; because they were dissatisfied with the Crimean government. At length, in the year 1779, after they had sufficiently evinced their predatory and turbulent disposition towards the Kalmuks, as well as the Circassians and other inhabitants of the Lines of the Caucasus, some Russian troops were sent against them, under the command of General

Suwarof, who was empowered by Government to reconduct these refractory hordes to the steppe near the Dniepr. But, being little accustomed to subordination, numbers of them fled across the river Kuban, and were, in the year 1788, after many struggles, completely dispersed, so that a considerable part of these fugitives became a prey to the mountainous nations. Nevertheless we meet but rarely with an Ulussian there in a state of bondage; and it is inexplicable what has been the fate of that great body of the Nagais, who, with their numerous flocks, traversed the immense steppe from the Kuban to the vicinity of the rivers Don and Manytsh, and in an eastern direction as far as the Kalas. Only a small part of these people were conducted to the steppe between the Berda and Moloshnye Vody, where they live in profound peace, and are comparatively wealthy: a still smaller part is at present encamped in the vicinity of the rivers Kuma and Podkuma, and the mountain of Beshtau; while another branch of the Nagais have crossed the Kuban, and placed themselves under the protection of the Turks. Many of these were made prisoners at the taking of Anape, transported to Taurida, and distributed among the Nobles of that country. The principal branches of the Nagais, exclusive of those inhabiting the steppe near the Volga, and the families which remained at Astrakhan, are the following:

1. Naurus, a tribe which has for the most part remained beyond the Kuban. At present only thirty-six Murfen, or Nobles, and about four hundred of the lower order of people, live

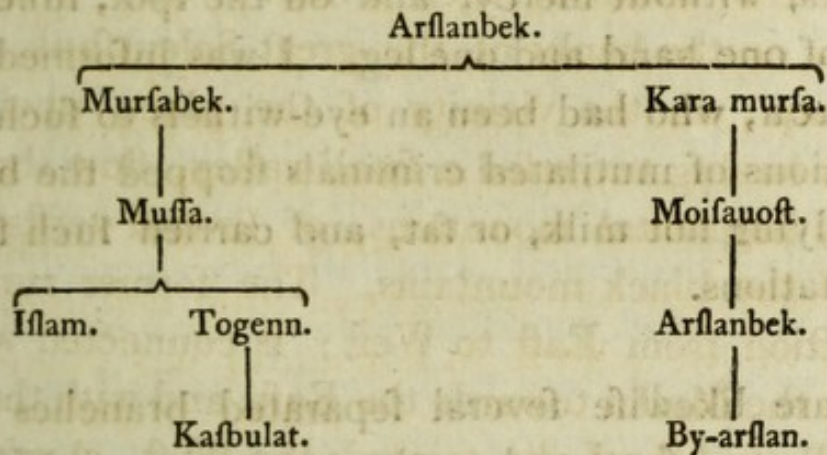
- live under the protection of Russia, in the vicinity of the Beshtau; though the whole tribe formerly amounted to upwards of two thousand families.
2. Kaffai, a part of these Ulassians, together with the preceding, and the families attached to the Nobles of Islam and Akhlov, were removed to the banks of the Kuma, between the rivulets Tanglik and Pfemuka; but the greater number of them deserted across the Kuban. The whole of this tribe formerly consisted of eight thousand families.
 3. Kaspolat. Of this tribe are left seventy-two Mursen and four thousand three hundred of the common people, who live under the protection of Russia, within the Lines of the Caucasus.
 4. Kantshak; of which tribe the Russians have retained sixty-five Nobles, and two thousand five hundred men.
 5. Mangut, or Mamsgut; a tribe governed by their Prince Mursakgirei: they were removed in the year 1790, together with that of Kassaiaul, to the banks of the Kuma, during the expedition entrusted to Lieutenant-General Bibikof. Of these people there still remain fifty-seven Nobles and eighteen hundred subjects within the Lines of Caucasus; they all are at present governed by the Commandant of the fortress of Constantinogorsk, in whose district they possess their pasture-grounds. The remainder of this tribe, who continue on the opposite bank of the Kuban, lead a wandering life between the Laba and the Urup.
 6. Yedissan.
 7. Dshamboiluk; and,
 8. Yetishkul:

8. Yetishkul: these tribes have been transplaced to the neighbourhood of Moloshnye Vody, and shall be subsequently spoken of.

To the tribe of Kaffai also belong the people called Mansurians, after the name of their Prince: they live among the Abassines, on the banks of the great Selentshuk and the Urup, or Uarp; in the vicinity of the place where both rivulets, after having traversed a small valley, flow through a chain of lofty horizontal mountains, of several versts extent, at the foot of the black mountains. The former runs in an uniform direction from East to West; is connected with the latter beyond the Malka towards the East, and with the black promontory beyond the Laba, towards the West. A great part of these Nagais were removed to the banks of the Kuma, during the expedition commanded by General Tokelli in the year 1787, when they inhabited what is commonly called the Mount of Serpents, in the promontory of the Beshtau, under their Prince Arslanbek Mansur. In the summer of 1793, however, they left their former habitations and emigrated to the source of the Kalasus. They lead a wandering life, like all the tribe of the Nagais; yet do not neglect the cultivation of millet, though their flocks afford them the principal means of support. Three brothers of the before-mentioned Prince Mansur have settled with their Ulussians beyond the Kuban, and occupy the narrow defile of the mountains of Urup, where the rivulet Inal falls into that passage on the right; as well as the banks of the two rivulets Tegen, which flow into the Urup on its left side.

Among

Among the tribe of Kaffai was an hereditary family of Princes, who maintained a powerful influence among all the Ulussians. The common parent of this family was Kasbulat, from whose son, Arslanbek, sprung the two following lines of descendants,



Arslanbek, the father of By-arflan, was a famous depredator, known by the name of Sokur-Hadshi, who committed great ravages on the steppe near Astrakhan till he was conquered by General De Medem, and compelled to pay homage to Russia; his family became extinct by the death of his son Kasbulat: the last descendant of the other lineage was baptized Amanat, and is now commandant of Mosdok, by the name of Knafs Dmitri Vassilievitch Taganof.

All the Nagais still discover by their features, that they are of Mongolian origin; nay, some of them have faces exactly resembling those born after the first intercourse of the Mongolians, or Kalmuks, with Tartar or Russian families: on the contrary, in the Tartars of the Crimea this national character, expressed in the features of the face, is almost extinguished, on account of their frequent intermarriage.

The

The Nagais inhabiting the banks and steppes of the Kuban, are a very unfettled people, whose disposition to robbery has not yet been changed ; though they have of late years been much reduced by capital and well-deserved punishments. Formerly the method of chastising them was extremely severe ; as the culprits, without mercy, and on the spot, suffered the amputation of one hand and one leg. I was informed by the late Dr. LERCH, who had been an eye-witness to such scenes, that the relations of mutilated criminals stopped the bleeding parts by applying hot milk, or fat, and carried such sufferers to their habitations.

V. There are likewise several separated branches of the Nagais and Tartars scattered on the mountains of the Caucasus: we shall principally mention the following, who dwell in the eastern part of those mountains :

1. The Kумыkes ; and,
2. The Terekemes, who inhabit the country situated between Persia and Georgia.
3. The Karatshais, Karshagas, Karatsherkes, or Karatsholes, a tribe of the Nagais, settled in the fertile valley bordering on the northern foot of the Elburus, around the sources of the Kuban, at a distance of one hundred and forty versts from Georgiefsk. Their whole number rather exceeds two hundred families, who pay tribute to some of the Circassian Princes, have fine herds of cattle, but bestow little attention on agriculture. They generally live separately in families,

and border towards the West on the Urup and the Beshilbai; towards the South, on the Sona, or Svaneti; to the East, on the Kabardines; and to the North, on Altekesek Abassa: their national affairs are adjusted by a Chief, or an Elder, who receives a sheep as a token of their submission. — The only road leading to the habitations of these people, is a very difficult and dangerous one for travellers on horseback; it runs along the banks of the Kuban and the Bakfan. They breed a small but stout and spirited race of mountain horses, which are famous for their excellent qualities.

4. The Tshegems and Balkares, sometimes called Malkares, are likewise denominated Bassianes from their Chief, whose name was Bassian. They assert that, according to tradition, their common ancestors were a mixture of Bulgadares and some Greeks, who were afterwards joined by several Kумыks, Nagais, and Kalmuks. It is evident, from the number of old ruins still discoverable, that the Tshegems were formerly more numerous, when they professed the Christian religion. Indeed they are still in the possession of churches, among which, one situated near the banks of the Tshegem, is particularly remarkable: it is built on a rock, in which they have excavated a serpentine path, provided on both sides with iron balusters. In this church are still preserved some fragments of books, a few leaves of which I procured by sending a person on this dangerous expedition. One of the leaves contained part of the Gospel in the old Greek dialect; the others were detached parts of books used in the Greek Liturgy.

The Tshegems possess several holy wells, in the vicinity of which the cutting of wood is prohibited. Their herds of cattle are considerable; but instead of horses they rear and employ a species of mules, which, among them, are called Kadra. Arable land is, on account of its scarcity, their greatest national wealth, and they bestow uncommon labour on its cultivation. Millet and oats are the principal grains sown by these tribes: the latter is converted into beverage, and likewise serves as fodder for their mules. Their honey is of a delicious flavour; and their bees sometimes also produce that intoxicating* species which is mentioned by Xenophon.

These people inhabit a country near the source of the Argudan, but principally that of the Tsherek, on the high mountains. For the pasturage of their cattle in the lower vallies, they are obliged to pay rent to the Circassians, who, at the same time, consider them as a tributary nation, and treat them as their vassals. It is however certain, that the Tshegems are anxious to regain their liberty, and have applied for the protection of Russia; an alliance which the Circassians, by all possible means, endeavour to prevent; and for this reason permit none of the former to visit the Lines of Caucasus. In the year 1783, some Bassian deputies, who were sent with a view to solicit the protection of Russia, escaped the vigilance of the Circassians, by taking a circuitous route, and availing themselves of the good offices of Lieutenant-Colonel de Steder; but these

* The honey of Guri, or Guriel, is said to be nearly as hard as sugar, and of a peculiarly excellent taste; on account of which it is sold as a scarce article, even at the market of Constantinople.

unhappy messengers were dismissed with mere promises of future relief, which have never been fulfilled. As the Circassians place every obstacle in the way of their commercial intercourse, the Tshegems are obliged to resort to Radsha, situate on the opposite side of the mountains, where they frequently visit the market of Onis, especially for the purpose of purchasing rock-salt.

The Tshegems, who are sometimes called Gigui, or Dshig, inhabit the country contiguous to the source of the river Tshegem, as far as its left branch, called the Shaudan, and amount in number to three hundred and sixty-eight families, who live in the following eleven villages :

Ulu-Elt ;	Kam ;
Tabenindshil ;	Arfundak ;
Berdebi ;	Bulungu ;
Mimala ;	Sherlige ;
Adshe ;	Ustoshirt.
Tsheget ;	

Their country produces ferruginous earth, from which iron is smelted ; they likewise possess lead-mines in the Kargashin, or mountain of lead, where this metal is visible on the surface, and of which they make their bullets : they also manufacture salt-petre, in large quantities, a great part of which is converted into gun-powder for sale. — The people of this tribe have, by some writers, also been called Zekhi ; a name from the analogy of which, it has been conjectured that they originally were Bohemian fugitives.

The Balkares occupy the country near the source of the Argudan, but chiefly that of the Tsherek : their number, it is asserted, consists of twelve hundred and thirty-six families, who live partly in detached places, but principally in the following nine villages :

Ulu-Malkhar* ;	Khurdaira ;
Shavarda ;	Mokhaula ;
Gobfarta ;	Befinga ;
Adshalga ;	Kholam.
Irkanta ;	

According to the information given by the Kabardines, the last-mentioned village was infected with the plague, at the time when we visited this neighbourhood. Under this malignant pretext, they guarded all the narrow defiles leading to the country of the Balkares, and threatened to shoot every person who should attempt to cross the Kabarda ; in order to cut off all communication between the latter and the Russian troops, who were then encamped on the banks of the Bakfan.

These tribes were the original inhabitants of the countries now possessed by the Kabardines ; but though they have retired to the high mountains, with a view to evade the persecutions of their oppressors, they have still remained tributary to those lawless knight-errants. The productions, which the Balkares bring to the markets of Radsha, consist of felt in pieces, as well as in wrought cloaks and coarse coats, the skins of the martin, fox, and other animals ; in return for which, by way

* Great Malkhar, from which this tribe appears to have derived its name.

of barter, they receive rock-salt, coarse cotton stuffs, and other commodities of inferior value. The principal part of their flocks consists of goats and sheep. They cultivate small fields of barley and millet, but more rarely wheat. It is not a little curious that these untutored people are still ambitious of being called Christians, because they eat the flesh of hogs; but their chiefs, or elders, profess the Mahometan religion.

VI. The Offetes, or Ir, and, according to their own denomination, rones, whence their country is called Ironistan, are a very peculiar people, who have been compelled to retire to the interior parts of the high mountains. Their boundary towards the North is the Caucasus, towards the West the river Urup, to the East the Terek, to the South-west the river Rion, or Phasis of the Ancients, and to the South-east Aragva. The whole tribe is divided into districts, or Kom; and villages, or Kou.—With respect to the tongue exclusively spoken by these people, it is remarkable, that it has many words in common with the Persian, German, and Slavonic languages, as well as expressions analogous to the dialect of these nations.—The Offetes are a barbarous, predatory, and miserable race of men, who have always infested the public road leading to Georgia, through the mountains which they inhabit.

The two most populous and powerful districts of the Offetes are those of Dugor, and Durdugor: to these belong the following villages:

1. Kabilef, on the banks of the Lesken;
2. Karetshau, near the rivulet Kharfin, which falls into the Uruk on its left bank;
3. Ba-

3. Bashileva, on the left bank of the Urukh, at the foot of the horizontal mountains ;
4. Tumak vafha, on the lower banks of the Urukh ;
5. Durdur, near the rivulet of a fimilar name ;
6. Two villages called Kubati, on the banks of the Ufdon, or white river.

All these villages are situated in the vicinity of the high mountains, and border on the Great Kabarda ; but the following are built in the interior parts of these mountains :

7. Sadelesk, on the extremity of the defile bordering on the Urukh, near the road to Dugor ;
8. Khenis ;
9. Bigem ;
10. Two villages called Nari ;
11. Lesgor, on the left bank of the Urukh ;
12. The villages named Donifars ;
13. Kombult ;
14. Farfikan, on the right bank of the Urukh ; a castle situated on a rock ;
15. Gagion ;
16. Akfau, on the left bank of the Urukh ;
17. Farisgau ;
18. Kalairag ;
19. Khurigau ;
20. Golak ;
21. Geotai ;
22. Kamat ;
23. Okag ;
24. Maftinok ;
25. Tadit ;

25. Tadit ;
26. Kofak ;
27. Tzebogi ;
28. Fifnel ;
29. Okas ;
30. Tolis ;
31. Galiat ;
32. Vis ;
33. Sturfas ;
34. Dalardum ;
35. Valakhofar ;
36. Kablek ;
37. Bek-Kiga ;
38. Novokau ;
39. Akfargik ;
40. Kufou ;
41. Stona, where a temple is erected for offering up
sacrifices.

The Tsherkeffates are a tribe of the Dugores ; they live near the extreme source of the Urukh, where this river precipitates itself from the snowy mountains, and near the mouth of the Arap, which flows from the South-east into the former ; they occupy the following places :

1. Two villages, called Kantomirovi.
2. Two ditto, ——— Karabugovi.
3. Sturkau — and other posts possessed by families detached along the skirts of the mountains.

The Dugores have for a long time lived separate from the other tribes of the Offetines: they are partly subject to the Badilettres, a race of Knights dwelling on the mountains, and partly independent. The inhabitants of Donifars, as well as those of the villages situated in the neighbourhood, on the left bank of the Uruk, live under a republican form of Government, and do not maintain a friendly intercourse with the other Dugores, but are esteemed for their bravery. In some part of their territory is a remarkable cave, consecrated to Saint Nicholas, who, as tradition says, appears here in the form of an eagle. The sacrifices made to this tutelary Saint, consist of the flesh of animals, which is placed in the cave, and is no doubt a sufficient inducement for the eagles to visit this place. The Dugores possess a temple devoted to their sacrifices, which are made on important occasions, when they kill their cattle, consume the flesh, but carefully deposit the bones in the temple. — Among the Tsherkeffates we also found sacred groves, in which every family has its appropriate place for erecting huts, under the shades of trees or bushes. These people celebrate an annual feast, which is continued for eight days, and bears great resemblance to the Jewish passover. During this religious festival every passenger is stopped, and obliged to join them in the celebration of the feast, when all the families strive to emulate each other in evincing their hospitality.

With respect to the other tribes of the Offetines, I could not gain any information additional to that already published by GULDENSTADT. In external appearance they exactly resemble the peasants of Northern Russia; have, in general, like them either

either brown or light hair, occasionally also red beards, and appear to be very ancient inhabitants of the mountains.

I was informed, that in the vicinity of these snowy mountains, where the *chamois*, or wild goats, depasture, a large bird is frequently met with, apparently a species of pheasant, or partridge, and which the Offetines call Sym; but the Circassians and Tartars, Dshumaruk: the cock of these birds is named Beshbarmak, because he is provided with five talons on each foot. According to report, his plumage is beautifully variegated: he whistles at the sight of man on the solitary mountains, and thus cautions the wild goats, or Turi, against the persecutions of the huntsmen. Although I made great promises to the Circassians and Offetines, I could not procure one of these birds. I have however related, for the information of future travellers, all the particulars I could obtain relative to this winged animal; it also visits that side of the mountains, in the vicinity of which we travelled, especially such places as are destitute of wood, and where we first discovered the *Rhododendron Caucasicum*. Of this plant I received a variety of specimens, by the party dispatched for the purpose of taking the bird; but that non-descript eluded their vigilance.

VII. There is a tribe of people differing entirely from all other inhabitants of the Caucasus, in language as well as in stature, and the features of the countenance: their national name is Lamur, signifying inhabitants of mountains; by others they are called Galgai, or Ingushians. Their nearest relations, both by consanguinity and language, are the Tshetshentzes,

who by them are called Natshkha. I had an opportunity of seeing two deputies from this nation, in the Russian camp near the Baklan. On account of the characteristic national features of their face, their stature, and armour, all which my designer has expressed in the most accurate manner, I have given a representation of these semi-barbarians, in the twenty-second plate. Their manner of pronouncing appeared to us, as if their mouths were full of stones. We were informed that they are an honest and brave set of people, maintain their independence, and are subject only to their elders, or priests, by whom their religious sacrifices are performed. They are almost the only nation inhabiting the Caucasus, among whom the shield has been preserved as a part of their accoutrements. These bucklers are made of wood, covered with leather, and bound with iron hoops of an oval form. The short knotty pike which forms part of their armour, serves not only as a weapon of defence, but is likewise used for supporting the gun between its forked branches, by fixing the pointed end in the ground, which enables the sharp-shooter to take a more accurate aim. The Ingushians are excellent marksmen, but bestow little attention either to agriculture or the rearing of cattle, and are consequently in a state of poverty. They live in the vicinity of the sources of the rivers Kumbelee and Sunsha, and extend their habitations along the high mountains to the eastern bank of the Terek, where they border on the Ossetines. The Karabulakes are descended from the same tribe, and likewise border on the Ingushians towards the West, and on the Tshetshentzes towards the East. The three tribes speak nearly the same language, though it has not the least analogy to any other
dialect,



dialect, except that spoken in Tushet, for the first knowledge of which we are indebted to the Universal Dictionary of the late Empress CATHARINE II. The judicious GULDENSTADT has thought proper to class this tribe of people under the common denomination of Mitzdshegis, or Kifti, who appear to be the remainder of the true Alanians. In a maritime journal, Periplus, extracted chiefly from Arrian and Skymnus Ghius, the Tauridan city of Theodosia is called by the compound Alanio-Tauridan name of Ardauda, which, in the Alanian dialect, signifies seven gods. This name still bears the same signification in the modern dialect of the Kifti, among whom Uar expresses the number seven, and Dada denotes a father, or God: and it is remarkable that the term *Thaut*, among the worshippers of the fire, in the vicinity of Baku *, to this day signifies the name of God. I could not discover that in any other language spoken by the nations of the Caucasus, the numerical word seven has a sound analogous to that of *Ar*, or *Uar*.

There is a very strong saline spring issuing from a mount possessed by the Ingushians: its water is, according to report, so much impregnated with salt, that two buckets of it produce one of that article: after forming a small rivulet, this spring falls into the Forthan †.

I was assured by a Roman Catholic missionary, that these people possess an old church, which is built according to a model taken from the sepulchre of Jesus Christ. Although it

* See Reineg's Description of the Caucasus, in German, part i. page 157.

† The natives of that country pronounce the "*th*," in Forthan, similar to the English, and likewise to the Θ of the Greeks.

bears evident marks of antiquity, it is nevertheless of so firm a construction, that it but seldom requires to be repaired. In the front of this church, there is still visible a Gothic inscription : and the same characters are also made use of in the books written with gold, blue and black letters, in the Latin language, which are here preserved as sacred relics. The building itself is continually kept in proper repair by the Ingushians, who, at present, rather incline to profess the Mahometan faith. One of the most remarkable circumstances relative to the history of this church is, that it has established revenues, which consist in heads of cattle ; nay, it is held in such profound veneration, that nobody ventures to enter it, and the natives, when viewing it at a distance, prostrate themselves in adoration. Their most sacred oaths are made in the name of this church, and woe to him who should attempt to commit perjury ! In diseases, as well as on other unfortunate occasions, the church is their principal asylum ; and there are above thirty small habitations erected in its vicinity, perhaps from the vestiges of a former cloister.

The Ingushians have repeatedly solicited the protection of Russia, and are, even now, extremely anxious to obtain tracts of land in the plain country ; a grant which would render these industrious farmers very useful and loyal subjects.

Although the Tshetshentzes speak the same language as the Ingushians, their national character is totally different from that of the latter. They are justly considered as the most turbulent, hostile, and predatory inhabitants of the mountains, so that they are without exception the worst of neighbours on the Lines of Caucasus. There elapses no year in the annals of

their history, in which they do not carry off man and beast, or commit other excesses, and continually infest the road leading from Kislar to Mosdok. It is therefore matter of regret, that they cannot be easily seized and brought to condign punishment for their lawless conduct, as they inhabit the woody and abrupt mountains, which are almost inaccessible to strangers. These are the same people who, during the last war, afforded the most active support to Sheikh-Mansur, the pretended new prophet; and since that period the Tshetshentzes have not been reduced to obedience.

VIII. Another chain of mountains, as lofty as the former, is inhabited by a nation called Suanians, but by the Georgians termed, Svanetti, by the Kabardines, Sona, and by the Bafianes, Ebse. — Suani is the peculiar name of the natives, and signifies highlanders. Their habitations on the southern basis of the Elburus extend to the West, as far as the source of the Engur; towards the South, they border on the principality of Dadian, and the Imeretian province of Odishi; towards the East on the source of the Tzenis-tzkale, or horse-river, which indubitably is the *Hippus* of the Ancients. They live dispersed in particular families, are great depredators, but nevertheless call themselves Christians. Agriculture and the rearing of cattle are not altogether neglected among them: their principal intercourse is that with the provinces of Imeretia and Mingrelia. The population of these depredators is not exactly known: it appears, however, to be but inconsiderable, because Tzar Solomon has repeatedly reduced them to submission, with an army consisting of not more than two thousand men.

With

With respect to the other mountainous nations, especially the Lefgician tribes, I should not attempt to give any account, after the circumstantial description furnished by GULDENSTADT and REINEGS, had I not obtained some information relative to the Kubeshanians. The former of these writers did not succeed in acquiring any knowledge of their language, and was consequently unable to supply us with a vocabulary. It has been conjectured by some, that the inhabitants of the city of Kubesha were originally Franconians, while others supposed them to be of Genoese, or Venetian origin; nay, it was reported among the inhabitants of the Lines, that a native of Kubesha, on his pilgrimage to Mecca, had lately met by chance some Venetian sailors at Constantinople, with whom he could converse in intelligible terms. As I had an opportunity of speaking to a native of Kubesha, I shall communicate to the reader a few phrases I learnt in consequence of my questions, and from which it will appear, that their language is analogous to that of Akusha, and partly also to the dialect of Kafikumuk.

I salute you	{ in the Kubeshanian } tongue - - }	Senfartsha!
Whither dost thou go?	- -	Tshinar Kuli?
What news is there?	- -	Sekhabar Deba?
Bread	- - - -	Katz.
Salt	- - - -	Tze.
Water	- - - -	Shin.
The Sun	- - - -	Bargey.
Clouds	- - - -	Girik.
A Woman	- - - -	Kunud.

A Girl

A Girl	Rurfi.
A Boy	Darga.
A Dress, or Coat	Soktan.
Come hither !	Iho vanna !
Go thither !	In tavakan !
The Head	Bek.
The Eyes	Khuli.
The Eyebrows	Net.
The Nose	Kanki.
The Mouth	Mugli.
The Teeth	Suda.
The Beard	Mutzur.
The Neck	Kaf.
The Shirt	Kheva.
The Ears	Lege.
The Pelisse	Tintana.
The Cap	Kapa.
Boots	Tshekma.
Stockings	Karti.
The Girdle	Iri.
Father	Dudesh.
Mother	Nem.
Sister	Dofi.
Brother	Ofo.
A Horse	Artsh.
The Saddle	Im Kapta.
To kiss	Mindar.
Female organs of generation	Kutma.
The Penis	Duna.
The Fundament	Khoa, Khai.

Among the modern inhabitants of the environs of the Caucasus, should also be included, not only the brave Russian Kozaks of Grebenski and Semeinofski, who formerly settled in this vicinity, but likewise the Kozaks of the Volga or Dubofski, who, since the year 1771, emigrated to the banks of the Terek; and lastly, the Kozaks of Tshernomorski, who have lately peopled the right bank of the river Kuban: by this new population the frontier line on that river, which before was in a manner interrupted, has been rendered complete, since the late treaty of peace with the Ottoman Porte, so that it now extends from Ustlabinskoi Krepost, or the last fort of what is properly called the Lines of Caucasus, as far as Taman. They are the descendants of those fugitive Kozaks of Saporogi, who, subsequent to the suppression of the celebrated Setsh, on the Dniepr, and immediately after the peace of Kutshuk-Kainardshi, went over to the Turks, but were, during the last war, again graciously received by Russia. After the conclusion of that war, they obtained the grant of the country situated between the rivers Kuban and Yei, as far as the sea-coast, together with the isle of Taman: Government also conferred on them new privileges, with permission to increase their number to fifteen thousand men, and adapted their constitution to the same regulations as the Kozaks of the Don, so that they now form a frontier militia, live in a married state, and possess those beautiful countries and fisheries on the last-mentioned rivers, as well as the sea-coast; while they serve as a cordon to check the incursions of the Abassines and Circassians. In their civil and military constitution, they are subject to the command of the Lieutenant-Governor of New Russia and Taurida.

The principal place inhabited by the Kozaks of Tshernomorski is Ekaterinodar, about sixty versts below Ustlabinskoi Krepost: above this place they possess the Slobodes, or villages of Onofrievka, Constantinovka, Stoyanovka, Bolshaya, Malaya, Kirgizovka and Kadshukan. Between the first and second of these villages is built the redoubt of Petrofskoi; and between the third and fifth, that of Krivoe. On travelling down the river from Ekaterinodar, we observed two redoubts called Slavaniskoi, and also a nameless one; we then came to the Slobodes of Vidnaya, Tshernolesskaya, and Sakharovka: these Kozaks also possess and garrison, near the sea-coast, the places named Temruk, Taman, Atshuef, and Yeiskoi gorodok, the last of which has important fisheries; besides many lonely habitations and scattered farms, with excellent pasturage for rearing cattle, which the country produces in abundance.

As the river Kuban, in the last treaty with the Ottoman Porte, was fixed for the boundary on the eastern shore of the Black Sea, there have been no regulations made since that period, with respect to the inhabitants near the source of that river, and the chain of mountains extending to the East and South-east of the Elburus. Russia, therefore, retains her privileges relative to the nations inhabiting the eastern side of the Elburus, as far as the Caspian Sea, and from the Lines of Caucasus as far as the Kur and the promontory of Ararat. Many of these tribes have, at different times, submitted to the protection of Russia, though they have by no means become good and trusty subjects; nor has the Russian Government succeeded in imposing the least burthen or taxes either on the Circassians and Abassines, or on the Nagais recently settled within

within the boundaries of the Kuban. The Abaffines, however, have lately been prevailed upon to pay one ruble for every cart-load of salt, which they fetch from the lakes within the boundary, and of which their herds consume considerable quantities; while, on the contrary, the tribes living beyond the Lines are still permitted to export this commodity, without paying any duty to the Government.





Journey from Georgiefsk to Tsherkask and Taganrog.

ON the twenty-third of September, in the afternoon, we left Georgiefsk, with a view to reach Taurida before the setting in of the winter. The weather was unusually serene and agreeable for the autumnal season, excepting the morning fogs, which extended from the mountains to a considerable distance into the country. My first intention was to travel along the banks of the river Kuban to the Isle of Taman, and thence to proceed to Kertsh and the Tauridan peninsula; but this road, which would considerably have shortened my journey, was, according to the different accounts I obtained, impassable with carriages, and could be undertaken only on horseback; both on

account of the branches of water and fens occasioned by the overflowing of the above river, which is not provided with proper bridges, and because the low country is frequently inundated in consequence of the sea-winds. The Kozaks of Tshernomorſki, having but lately reforted hither from their ancient habitations, had juſt begun to ſettle themſelves in the lower countries of the Volga; ſo that they could not be expected to have beſtowed much attention to the improvement of the roads.

In conſequence of theſe impediments, I reſolved to take a circuitous route by Tſherkaſk, Taganrog, and Perekop, at which places regular poſt-ſtations have been eſtabliſhed, and are continued along the whole road to Taurida.

After travelling ſeveral verſts, in deſcending the high ſteppe on which Georgiefsk is ſituated, we proceeded over a conſiderable declivity to an extenſive, low, and level country: this is traversed by the river Kuma, flowing between clayey banks, with a deep current of turbid and muddy water, from ſeven to eight fathoms broad, and uniting farther downwards with the more rapid Podkuma, which rolls over a bed of ſtones. Along the banks of the Kuma there are foreſts producing different kinds of wood, the growth of which, however, is not attended to in theſe regions of wilderneſs. Beyond this river, the low country again gently riſes; but we could ſtill obſerve, at a diſtance, the baſe of the promontory terminating in two terraces, while on our left we ſaw, towards the ſource of the Kuma, what is called the Iron Mount with its flat top, and ornamented with a beautiful thicket: at a ſtill greater diſtance appeared the Mount of Serpents, conſiſting of horizontal ſtrata of lime, which gradually declined towards the banks of the Kuma.

We rested this night at Alexandria Sloboda, a large village contiguous to the abrupt bank of the Kuma : our host, M. de Basse, the superintendant of the Victualling-Office, received us with marks of great hospitality. On the opposite bank of the Kuma, we observed a pleasant wood, in which a small vineyard had been planted by a Russian peasant. — Kumskaya, or Kum-gora, is about fifteen versts distant from this place, on the left bank, towards the source of the river, and produces several sulphureous, tepid springs.

On the twenty-fourth of September we ascended very gradually from the low country of the Kuma towards the prominent heights which represent three parallel ridges, extending in a direction from West to East, and North-east : this plain has a very heavy soil of clay, which the river had apparently softened by successive inundations. Between those three ridges, we took notice of two dry beds of rivulets, which begin to form the Sukhoi, or dry Karmyk ; and, after passing the last ridge, we arrived at the Karmykly, which is sometimes called Mokroi, signifying the wet Karmyk ; it is supposed to be forty versts distant, but at present it contained no water, except a small quantity collected in pits, which had been dug above the village inhabited by invalid soldiers. The distance of this village from Alexandria has evidently been exaggerated in the military routes ; as, according to my calculation, it can scarcely amount to thirty versts.

On the black soil of the fertile steppe we observed in every direction a very luxuriant vegetation. Besides the *Statice Coriaria*, the great *Crambe orientalis*, and *Dipsacus laciniatus*, we

met with large umbrageous plants, such as thistles, burdock, and wild orach in abundance, together with many others of a gigantic growth. We also, for the first time, discovered here, as well as on the succeeding heights towards Severnoi, the flower-de-luce which GULDENSTADT considers as a peculiar genus, and denominates it the *Iris desertorum*; but which, in every respect, agrees with JACQUIN'S *Iris spuria*, except that its flowers in this region are uniformly white; the dry capsules of this plant were generally perforated by the worm.

After passing the Karamyk, we again ascended a considerable mountainous tract, from which the small rivulet of Sablya, or Klisb, runs in a serpentine direction towards the Karamykly, and its banks are here and there covered with brushwood: on these eminences we first distinctly perceived the horizontal bed of sand which forms the subsequent hilly ridge. — In their vicinity we likewise met with the *Colchicum autumnale*, which was now in full blossom. — From the heights we proceeded to a low valley, in which the rivulet Tongusly, or hog's-water, takes its source: on the opposite side of that rivulet is situated the new fortress and town of Alexandrofsk, and on the banks along our road is a large Slobode, or village, surrounded with a rampart. Between these two places the rivulet has been dammed up, so as to form a small pond.

The town of Alexandrofsk belongs to the new Lines established in the year 1777, which, at present, are to a certain degree rendered superfluous, by a more connected fortification of the river Kuban, and the subsequent population of its lower part, where the Kozaks of Tchernomorski have been colonized:

all the forts of these Lines have been converted into district-towns, which, however, still serve as garrisons for a part of the numerous troops stationed on this frontier.

Beyond Alexandrofsk, we saw before us a considerable ridge, consisting of a sandy rock, which we ascended, after passing a valley inclosed by it on the one side, and by the rivulet Tongusly on the other: in this valley we observed several detached pieces of rock scattered in various parts. The small hilly tract is composed of an horizontal stratum of sand-stone, incumbent on calcareous masses; it is a yellowish and grey fossil, breaking in large squares and almost horizontal thick layers, from which, especially on the north-western side, mill-stones are hewn for the use of the whole neighbourhood. The tract itself has received different names: it extends in a chain from the foot of the Elburus; and, before it declines towards the level of the steppe, presents a high projecting ridge. On arriving at the top of this steep eminence, we found a dale surrounded with heights: here arises the small rivulet Ternovka, which joins the Tongusly. We at length very precipitately descended towards an extensive valley, on the open and horizontal elevation of which is erected the fortress of Severnoi, fifteen versts distant from Alexandrofsk: it is defended by a large and entrenched village belonging to the Kozaks, who have also fortified it with several redoubts.—The north-western declivity leading thither has occasionally a sandy surface, and is overgrown with the abundant *Cytisus pilosus*, which here attains to an uncommon height; but we could not discover the before-mentioned plants, which are peculiar to this kind of soil.

The mountainous ridge before described is a branch of the promontory of the Elburus, and runs in a northern direction, between the source of the Kuma and the angle formed by that river, after it has intersected the high mountains; it comprises the heights of Kara-Yælla, or Vorofskoi-Lefs, signifying the wood of robbers, as well as those of Krugloi-Lefs, or the round forest, and, before it reaches Severnoi, presents a high peak which, on account of its exposed situation to the wind, is called the Sviftun, or the whistling mount: at length we lost sight of this ridge, after having crossed it between the sources of the Tongusly and the Kalas. On proceeding from the low steppe which borders on the Kuma, towards this hilly tract, the plain country about Privolnœ begins gradually to rise. Near the Karamyk there is a considerable terrace, which becomes higher towards the source of that rivulet, till it forms the heights above-mentioned; and after presenting a variety of hillocks, which rise progressively, and extend even beyond the source of the Tongusly, it joins the highest ridge of sand-stone.

The eminences, which decline towards the steppe, belong to the same tract, and extend along the right bank of the Kuban as far as Protshnoi Okop. Those irregular and broken mountains situated opposite to the source of the lesser Selentshuk, as well as the heights of what is called the Shep-Karagatsh, or Temnoi Lefs, signifying the dark forest, near the fortrefs of Pregradnoi Stan, are parts of the same mountains from which the original brooks of the Yegorlyk derive their origin, at a very short distance from the river Kuban. Below Protshnoi Okop these lofty eminences again decline along the Kuban,
and

and are succeeded by a level, but elevated country, from which, at a distance of scarcely five versts from the banks of that river, the two rivulets Tshelbash and Beissu rise in a miraculous manner; and separately empty themselves into the sea of Azof.

This branch of the promontory of the Elburus* is particularly remarkable on account of its influence on the weather, climate, and vegetation of those countries which are situated to the North-west and South-east. The whole plain towards the Kuma, and especially the vicinity of Georgiefsk and Alexandrofsk, is so completely protected by this high ridge from the northern and north-western winds, that its inhabitants enjoy very mild winters, seldom have an opportunity of travelling on sledges, and even in the month of January make no addition to their usual dress. Such winters are likewise peculiar to the mountainous parts of Taurida. The spring in these regions begins very early; the heat of summer is intense, and the weather almost uniformly serene. All winds here are warm and dry, except those which blow from the snowy mountains, and the vallies of the Podkuma, the Malk, and the Bakfan; whence likewise the fogs and rains usually proceed to that country.—In Severnoi, however, which is but a short distance from the above-named mountains, the winter is frequently

* If we examine, by the map, the north-eastern tract of mountains which terminates with the Beshtau, between the rivers Kuma and Podkuma, and follow the lofty ridge extending from the source of the Kuban, in a western direction, over the springs of the southern collateral branches of that river, namely, Selentshuk, Uarp, Laba, and Shagvasho, towards the Black Sea, we shall find that the tract now described is the middlemost of those mountainous ridges which, from the Elburus, or the highest part of the Caucasus, spread in a northern direction towards the plain.

much longer, and more severe; for here the snow often falls to the depth of an arshine, and covers the country for a longer period of time: tempests from the West and North-west are uncommonly frequent, and occasion cold seasons. It is even asserted, that on this side of the mountainous tract there has sometimes been a rainy season, while the inhabitants of the opposite country have experienced very fine weather. During our journey over this mountainous ridge, we likewise met with much rain, that continued till we had passed a region over which the clouds had apparently taken a permanent station. From this short account it is evident, that the local situation of places in a great degree contributes to the vicissitudes of the weather, and that the rules adopted to prognosticate such changes are subject to error and uncertainty.

We stopped all night in the fortress of Severnoi, a place built with tolerable regularity: the inhabitants were then employed in erecting a new church of wood. Gentle showers of rain fell during the whole night, and were succeeded in the morning by a thick fog, through which we were obliged to continue our journey on the twenty-fifth.

After leaving the fortress, we proceeded down a considerable declivity to a dale with elevations on each side, where we remarked calcareous strata that formed the basis of the horizontal beds of sand-stone. In the valley we crossed the narrow but deep rivulet Tshetshora, in the Tartar language called Dshekinly, which accompanied us through the whole dale on our left, running in a serpentine direction as far as the Kalas. Twelve versts farther we reached the Kalas, over which are built two bridges: on its banks is a post-stage, and
on

on the heights a redoubt, defended by several foldiers and Kozaks; in its vicinity there is a small village inhabited by invalid foldiers. This rivulet derives its source from the eminence called Vorofskoi Lefs, but has scarcely any current at present; it runs in a narrow though deep bed, from two and an half to three fathoms broad, and has turbid but tasteless water. — In this neighbourhood, and for several versts of our road, there had been no rain, but the dust was moistened by the preceding fog, which, as we advanced, entirely disappeared.

At a short distance from the Kalas, after travelling over a mountainous country, we arrived at a declining plain, where we again met with a few marine plants, for instance, the *Statice Limonium*, *Artemisia maritima*, some species of the *Chenopodium*, and, in great profusion, the *Amaranthus Blitum*. We crossed on this plain the small rivulet Gorkaya, or the bitter brook. On advancing farther, the country, after a gentle rise, again declines and forms a still lower valley, in which we found a small lake of bitter water, and several saline tracts. The valley itself, however, is surrounded with eminences of limestone, over which we passed, and rather abruptly descended to a dale where the rivulet Yeshpagir takes its source from several springs, and runs into the Kalas. This place being a regular post-stage, a piquet was stationed in its vicinity, at the distance of thirty-three versts from the former. On the banks of the above rivulet, we observed the *Inula Helenium* growing in abundance. The glens between the heights were but sparingly covered with wood, while, in the lower grounds, especially in saline places, we took notice of the *Chenopodium maritimum*, the *Atriplex laciniata*, and a few other marine plants. After leaving
this

this low country, crossing over a height, and travelling about fifteen versts, we passed two steep and high ridges of the horizontal mountains: but, on proceeding twelve versts farther, we met with a still more considerable declivity of those mountains, near the village Nadeshta, which had been peopled with new Russian settlers, emigrated from the government of Kurski: in the vicinity of this place the small rivulet Mamai runs in a serpentine direction, and afterwards falls into the Atshla, near the village Mariinska.

As far as we could observe along our road, the species of fossil composing these horizontal mountains consisted of a grey, porous, and ancient lime-stone, presenting here and there impressions of various shells. The black vegetable mould was almost uniformly mixed with gravel and cylindrical pebbles; a composition which indicates very ancient changes, or the destruction of former beds that consisted of soft rock-stones.

After crossing the rivulet Mamai, we at length travelled over gently rising heights to the fortress and county-town of Stavropol, thirty-three versts distant from the Yesnpagir: the former place is situated on a level eminence, near the source of the rivulet Atshla; it is irregularly fortified, and in its vicinity is a populous Slobode, inhabited by Kozaks and peasants.

We were detained in Stavropol till the close of the night, before we could receive the requisite number of horses for the prosecution of our journey, as every person we accosted appeared to be in liquor.

The intoxicated Kozaks who were our guides, instead of conducting us to the more convenient though circuitous high-road, led us directly down the precipitate glen intersected by
the

the rivulet Atshla, where we remained at least an hour, before we could extricate ourselves; which fatigued the horses and occasioned considerable damage to our carriages. — Having, however, overcome these difficulties, and crossed the rivulet, we proceeded, during a part of the night, along the woody dale to the fortress of Moskofskaya, where we stopped till the following morning: in this fertile and delightful valley are built the two villages Mikhailovka and Pelagiada: it is watered by the rivulet Tashla, which takes its rise here, and empties itself into the Yegorlyk. In this vicinity, as well as in the countries we passed since the middle of August, there had been no rain except what had fallen on the preceding day. The road which, as far as Stavropol, generally ran in a western direction, now took a northerly course, and continued for the most part between N.W. and N.N.W.

The fortress of Moskofskaya is erected on a gentle elevation between the two rivulets Tashla and Yegorlyk, at a distance of fifty versts, in a straight line from the Kuban. On a declivity below the fort, there is a place called Stanitz, built by the wealthy Kozaks of Khoperski, on the banks of a small rivulet which falls into the Tashla: above its source we remarked considerable rocks extending to the North, and gradually disappearing; they were a continuation of the horizontal strata before mentioned. Behind the heights flows the large Yegorlyk, which intersects them at its union with the Tashla, in the vicinity of Donskaya Krepost. These eminences, after extending along the Tashla, and frequently inclosing this rivulet between high banks, likewise declined towards the level steppe, on the right of our road.

On the twenty-sixth of September, we crossed the small rivulet which runs along the Stanitz, at a short distance from a corn-mill established on its current: we continued our journey on the right bank of the Tashla, which is but thinly covered with wood, till we arrived at Donskaya, a stage of seventeen versts. The soil of this neighbourhood, as well as on the succeeding steppe, is uncommonly fertile: it uniformly consists of a black vegetable mould, frequently above an arshine deep, and abounds with the most luxuriant plants. Along the road we observed several species of the *Chenopodium* and *Amaranthus Blitum* growing thick on particular spots; and the *Daucus mauritanicus* was likewise abundant in moist situations.

On viewing the heights extending along the Tashla, we perceived at a distance those rough hewn statues which are commonly placed on sepulchral hills, in the steppes in the vicinity of the Yegorlyk, Kalas, and Yei, as well as between the rivers Dniepr and Donetz. If we may judge from the costume and form of the face, they uniformly appear to have been made by a people related to the Mongolians, who formerly inhabited those countries. These stone images are generally of a similar nature, and almost uniform construction, those in the vicinity of the Caucasus excepted; the difference of the sexes being their only distinguishing character: they are scattered in the country extending from the Kuban and the Terek to the valley bordering on the Manytsh, and likewise to the rivers Donetz and Dniepr. All these statues are erected on moderately large sepulchral hills, and their faces are exposed towards the East. Ruysbroek, or Rubruquis,

Rubruquis *, the monk, asserts in the tenth and fourteenth chapters of his journey to these countries, that the monuments in question belong to the tombs of the Kumanians, a wandering nation of that age : he calls them by the name of Koman-Kaptshat, and probably understands by this denomination that they are the pagan Ulussians of those times, who were of Mongolian origin, or perhaps Tartars mixed with the latter. But it appears from his description, that he has erroneously confounded them with the Alanians ; a people who, according to other passages of his journey, might more likely be supposed to be the modern Abassines, had I not already observed in the preceding part of my Travels, that they were one of the Cau-

* Rubruquis, chap. x. trad. de Bergeron, p. 19.—“ Pour les Comans, ils ont coutume d'élever une motte de terre sur la sépulture du mort, et lui dressent une statue, la face tournée à l'orient, et tenant une tasse à la main vers le nombril. Aux riches et grands, ils dressent des pyramides, ou petites maisons pointues ; et j'ai vu en ces endroits, de grands tours de briques, et en d'autres des maisons bâties en pierres, encore qu'en ces quartiers-là on n'y en trouve point. J'ai vu aussi une sépulture où ils avoient suspendu seize peaux de cheval sur de grandes perches, quatre à chaque face du monde, puis ils y'avoient laissé du Cosmos (Kumys) pour boire, et de la chair pour manger. Cependant ils disoient, que ce mort avoit été batifé. J'y ai remarqué d'autres sépultures vers l'orient : c'étoient de grands carrés de pierres, les unes rondes, les autres carrées ; puis quatre pierres longues, dressées aux quatre coins à l'entour de cet espace.” — It is evident that the last-mentioned tombs were erected by the Abassinians, but the suspended horse-skins belonged to the heathen Buretas, or Tartars, who emigrated from Siberia under the leaders of Dshingishan, and the pyramids were sepulchral chapels built by the Mahometan Tartars, so that consequently all the monuments here indiscriminately described, originated from different nations. This monastic traveller also supposes those statues to have been erected by the Kumanians, merely because they inhabited this country in the age in which he wrote ; though it is more probable that they were placed there by some more ancient people, who subsequently had either emigrated or been expelled from these regions.

casian nations, called the Kiftes. In the passage here quoted, and particularly towards the conclusion, he also describes such tombs on the eastern steppe, as are still erected in modern times by the Abassines and Circassians. — There are but few sepulchral hills without statues, or erect stones, to be met with on these steppes, though we find them not only more frequent, but of a larger size, in the vicinity of the Kuma and the Volga. The stone figures, on the contrary, which are very numerous around the coast on the Sea of Azof, are nowhere discoverable on the last-mentioned steppes. On the banks of the Yenisei, erect tomb-stones, with roughly formed human faces, are not uncommon *; but on the Irtysh and the Samara they seldom occur, and in general stand singly, as if the nation by which they were placed, had only travelled through that country. It is farther remarkable, that all the stone figures in the more eastern countries are hewn in a very rugged and shapeless manner, so that they frequently represent an uncouth mask; but in the plains around the Sea of Azof, especially in those situated to the North of that Sea, there are so many evident proofs of imitative talent, that the character of the face, the limbs and the costume of both sexes, together with their ornaments, may be distinctly traced. As such figures are frequently met with in those regions, it may be reasonably inferred, that the nation by which they were erected, must have lived there for a considerable space of time.

In the eleventh Vignette are represented four male figures, marked, *a*, *b*, *c*, *d*; and two female statues, denoted by the letters *e* and *f*. The former uniformly wear on their heads a

* See my former Travels, part iii. page 357.—Compare also, in the second part, page 504. and in the first part, page 222. of the German edition.

small, round cap, which covers only the top of the head ; an article of dress still in use among the Mongolian nations : the hair on the crown of the head is divided into three plaits, which unite at their extremities, and hang down behind ; but the lateral circumference of the head is represented in a shorn state. The short dress, however, as well as the straps and the boots, are not in common use among the modern Mongolians. The female figures, which are distinguishable by their dependent breasts, are exhibited in caps, such as are not observable among any of the modern nations inhabiting the North of Asia. But the necklaces of corals, and the plaited hair, are still Mongolian customs. Both sexes have broad, flat faces, resembling those of the present Mongolian race, and all the statues hold before them, with both hands, a cup, or small pot, similar to that with which the idols of Tybet are represented ; but the allegorical explanation of which cannot be easily conjectured. If we were to judge from the features expressed in the countenance of these statues, it is highly probable that they are of Mongolian origin : and if the Hunnians are a tribe of that people, as appears from the analogy of several Hunnian names, as well as from the description of their persons, transmitted to us by the Greek historians, these monuments may be fairly ascribed to them. Perhaps those Hunnians were the horde of the Oelotes *, which, according to a popular tradition among the Kalmuks, in ancient times emigrated to the West of Europe. AMMIANUS MARCELLINUS mentions these stone figures as

* See Pallas's *Sammlungen Historischer Nachrichten*, &c. or *Collections of Historical Accounts relative to the Mongolian Nations*, Part I. page 6.

being

being found about the banks of the Pontus, and compares the features of their faces to those of the Hunnians.

The statues still preserved on the plains near the foot of the Caucasus, and of which GULDENSTADT has given us a specimen with a Greek inscription, in the second part of his Travels, plate II. were probably formed by a more modern nation, as they exhibit a very different costume. Those which I have represented are evidently of a more ancient date, but none of them bear any inscriptions, and may fairly be ascribed to the old Hunnians; while the others appear to belong rather to the Christian era of the nations of the Caucasus, and to have been placed there, perhaps in the same century when the stone crosses were erected in these regions.

After leaving Donskaya, we no longer met with eminences, and observed only an open plain or steppe before us, entirely destitute of wood. On the half-way to the redoubt Besopasnoi, a distance of eleven versts, on the left of our road, we took notice of a broken statue placed on a moderate sepulchral hill: it evidently appeared to be the fragment of a female figure, was upwards of two arshines high, above the natural size, and of very rough workmanship. The lower extremities of this figure were buried in the soil, and the division of the thighs only could be discovered above the surface. This monument consisted of a white calcareous stone, composed entirely of broken shells cemented by nature, and uncommonly hard, such as is usually met with in the neighbouring heights.

Besopasnoi is twenty-two versts distant from Donskaya. In the vicinity of Pregradnoi Stan, about two versts and an half from

from the redoubt, we observed likewise on our left, a more considerable sepulchral elevation, from which a still larger colossal figure had fallen down, and now lay on the ground without its head.—Beyond Donskaya all the redoubts and post-stations were guarded by Kozaks of the Don.

Pregradnoi is a redoubt, below the union of the Tashla with the Yegolyk, twenty-five versts distant from Besopasnoi: the river near this place has been provided with an indifferent bridge: after crossing it we travelled over a steppe uniformly covered with black mould and fine verdure, till we arrived at the redoubt Medveshekurganskaya, twenty-three versts from the last stage. About half way thither, on our right, we noticed a stone cross four arshines high, with short arms; it was composed of a calcareous stone similar to the former. On its western side there is a Nestorian cross likewise of stone, and beneath it an inscription almost obliterated, of which there are legible only the words IBAHYN, and at the conclusion ΔΩΡΟΤ. —The steppe beyond Moskofskaya produces the *Crambe orientalis*, and in still greater abundance the *Statice Coriaria*, which may be collected here more conveniently, and at less expence, for the purpose of tanning.

Close to the left bank of the clayey and fetid Yegorlyk, and near the redoubt called Medveshekurgansk, we observed two large sepulchral hillocks. The rivulet here forms stagnant black miry marshes covered with sedge, but nevertheless contains pike, perch, and small carp; nay, it is said that even salmon are taken there, which arrive with the currents in spring. Pheasants have also been met with near the Yegorlyk, as well as in the vicinity of the Yei, and along the

Sea

Sea as far as Azof, but they entirely disappeared as we approached the river Don.

The night was tempestuous, and the wind blew from the South-west and North-west: it was accompanied with rain, which alternately continued on the 27th of September, and laid a very troublesome black dust.

The steppe still continued level, and contained a rich and black soil for a distance of twenty-two versts, as far as Vestoflavskoi, or Kalaly, a redoubt established near the place where the exsiccated rivulet enters into the steppe. At this post, there was stationed a commanding officer of the staff with twenty foldiers, as many Kozaks, and two pieces of cannon, for protecting the transports of provisions. Near this redoubt, on a sepulchral elevation, is a male figure hewn of stone, and about three arshines high, which has been carried thither from another country watered by the Yegorlyk. — The springs dug here afford a brackish and unwholesome water, on account of the saline mire lying immediately below the black soil: I have also observed a similar stratification in several other places. A small colony had nevertheless been formerly established here; but it was destroyed during the late commotions among the Circassians.

On quitting Kalaly, the country bordering on the redoubt Verkhna-Yegorlytzkaya, or Letnitzkaya, distant twenty-two versts, becomes rather hilly, with alternate glens: this change of surface continues from the redoubt before mentioned, as far as the bed of the dry rivulet Raffypnaya, and farther down to a dry glen, on the declivity of which the *Teucrium Chamæpithys* was still in full flower. At a short distance to the West

of this country, there arise several rills of water, from which the Yei takes its origin. — A little way farther, a level steppe again succeeds, and extends to the redoubt Pestshanye Kopani, the sand wells, or Pestshanokolodesnaya, a distance of thirteen versts : here springs have been dug in a dry glen, which conducts the snow waters into the rivulet Raffypnaya ; but they do not afford good water, because the fine miry soil, being of no considerable depth, forms in the open air incrustations of salt, by which the veins of water are in every direction rendered brackish.

This lower stratum of a plain, which in other respects indicates fertility, as it presents a fine verdure, appears to have been a muddy sediment deposited by the sea. As, however, the uniform plain of this neighbourhood is more elevated than the low country of the Manyth, and not so barren as the steppe, which was formerly covered by the waters of the Caspian Sea, but, on the contrary, being overspread to a considerable depth with a rich black mould, and grass, I cannot explain this difference in any other manner, than by supposing this plain to have been a boundless marsh of the old shore of the sea, round the former mouths of the Kuban ; or else that they were large vallies inundated at various times by the sea, similar to those near the Caspian Sea, before mentioned. Under the surface of this soil, the mud impregnated with salt has remained after the sea water had retreated ; and by the dissolution of the quantities of sedge and other plants, the thick stratum of vegetable mould has consequently been formed. Indeed, this black upper stratum more resembles a marine mud, than the soil produced in forests ; as there is not

the smallest trace of wood discoverable in these regions. The steppe, on descending along the Yei, becomes progressively more saline, and we observed here and there round salt-pits, similar to those we met with when travelling over the Caspian steppe; but that the superficies of this soil has not remained equally saline and sterile as we found it on the steppe just mentioned, appears to arise from the following causes:

1. Because the sea could, on its decrease, retreat from the uniform surface of the soil, without depositing any sediment.
2. On account of this uniformity, the surface of the soil has gradually been washed andedulcorated by the snow and rain waters, so that the saline particles have remained only in the lower stratum. On the contrary, the uneven parts of the surface, and sand banks on the Caspian steppe, have retained the sea water in large basins, and on its evaporation preserved the salt in a concrete form, even to the present time, on their argillaceous beds. Hence also vegetation, being checked by the dry and sandy nature of the soil, has not contributed to cover the surface with black mould, except in such places as had been purified of their saline ingredients, and occasionally moistened by the permeating waters. On the other hand, the superficies of the steppes of the Don, being almost corresponding to the level of the water, has been more frequently inundated, and consequently rendered more advantageous to vegetation: hence also the shells and other vestiges of the ancient sea have here been destroyed at a more early period, and converted into soil, while they have been uniformly preserved on

on the dry steppe of the Caspian Sea. In the sequel I shall take an opportunity of extending my observations on the former state of these countries, as well as the ancient shores of the Black Sea, and that of Azof.

Wild pigeons and chaffinches frequently appeared in large flights on these steppes: we also here and there observed bustards, which the Kozaks of the Don expertly attract by means of a small car covered with reeds, and imperceptibly pushed forwards, so as to shoot the birds with a gun.

Although the evening of the 27th of September was serene, with a cold north-westerly wind, and the starry horizon was illumined, even above the zenith, by a powerful *aurora borealis*, yet the rising clouds of the night were again accompanied with rain, which, towards morning, was dissipated by a continued tempest, so that the following day, though brightened by sunshine, remained cold and tempestuous.

The level and more elevated steppe, on which the rain had rendered the road very unpleasant, continued uniform as far as Srednii, the middle, or Vonutshii, the fetid Yegorlyk; a distance of thirty versts. At this place we found only a barrack for the Kozaks of the Don, who conduct the post, and a miserable inn. The fountain near the bank of the brackish rivulet contains a potable but thick water. The plain extends, without interruption, as far as the small rivulet Graf-nukha, or the muddy rivulet, which falls into the Kuga-Yei, or the Yei covered with rushes. Between this rivulet and the Nyshnii Yegorlyk, twenty-six versts distance, the country has a flat but elevated surface; and to the station of Kagul-

tinskoi, sixteen versts farther, it is partly of a wave-like form, and partly level. The glen near which the post-house is situated, contiguous to springs dug in a fat black mould, leads to the Kagalnik, a river arising in this country, and taking its course towards the Sea of Azof, on the right of the great road. On account of some floe-trees which were formerly found near this place, the glen before mentioned has received the name of Kagultinskoi ; in the Kalmuk language, Kogultu.

On the 29th of September we arrived at the dry rivulet Metshetna, called also Otnoshna Kagalnitzkaya, where we again met with a post-station and an inn. Our journey to this place, which is eleven versts distant, was attended with a continual rain: we crossed three deep glens which join the Kogultu, and then an elevated steppe. A Tartar house of prayer called Metshet, which is erected on the banks of the Manytsh, at a distance of thirty-five versts, appears to have furnished the name of Metshetna to this station*. On the right, towards the Manytsh, the steppe insensibly rises till it acquires the form of a ridge. In the low grounds, as well as on the heights, the black soil is uniformly tough and fat, similar to moor-earth ; and it continues of the same quality as far as the station Khomutetzkoï, twelve versts distant, near which place springs have been dug in a glen leading to the next post-station, called Kagalnik, eighteen versts from the former. The steppe is as it were excavated with similar glens, extending to the last-mentioned station, which is likewise situated in a glen : this place is celebrated in history, on account of events that occurred in more ancient times,

* See Guldenstadt's Travels, Part II. pages 42, 43.

when

when the Turks were in possession of Azof; it has since that period preserved the name of Ossiadnye Terni, or the bushes of the besieged. Near this station we were agreeably surprised with a view of a military camp, pitched with the greatest regularity. It contained a body of Chasseurs under the command of Lieutenant-Colonel Bakunin, who was ordered to proceed from Taganrog to the New Lines of the Kuban; but, in consequence of some disturbances which had broken out at Tsherkask, he received orders to halt, till further instructions. We now crossed the water of the glen, which forms the true beginning of the Kagalnik. The distance from this place to the station, called Batai, is computed to be sixteen versts.

On proceeding along the glens which contribute to form the Kagalnik, the higher steppe, which appears like flat ridges, almost imperceptibly becomes lower towards the Don and the Sea of Azof: here the false arm of water, called Podpolnaya, branches into a low country inundated by the river Don at high floods, and has scarcely any banks: near this water is situated, in a valley, the last post-house on the road to Tsherkask, at a distance of seventeen versts from the Kagalnik. From these successive inundations it may be explained, why the almost uniform steppe we passed from the Yegorlyk to this place is so little elevated above the Sea of Azof; and it gives additional confirmation to what I have said before, with respect to the ancient condition of this level country.

Immediately before the Podpolnaya we observed several small sepulchral hillocks, and one of a considerable size, around which the Kozak Tartars of Tsherkask have their places of interment. Some of the more recent graves are covered with

tomb-stones, most of which consist of rough pieces of conglomerate shells. Among these was one of white marble, similar to that of Paros, which appeared to have been a fragment of architecture; and another piece of flat marble, on which an inscription had been neatly cut in Arabic characters. These fragments have probably been tomb-stones which were conveyed by sea to Azof.

From the last regular post-house, on the banks of the Podpolnaya, we were obliged to travel seven versts entirely over a low country to the river Don, which we crossed by a bridge made of floating beams joined together by chains, and which conducted us to the city of Tsherkask. The prevailing tempest from the sea agitated and bent the floating bridge on this broad river in a dreadful manner: this, together with the noise of loaded waggons drawn by oxen, forming as it were a continued chain, was so impressive about twilight, that we apprehended every moment the destruction of the bridge: such a misfortune indeed sometimes happens, in consequence of violent storms; especially as the bridge is scarcely broad enough to allow two carriages to pass each other; and as it is not provided with railings to prevent the accidents of falling into the river. Thus we arrived in the evening at the capital of the Kozaks of the Don; a city which during the last twenty years has been considerably enlarged and ornamented with many beautiful private houses, inhabited by Kozak officers who have been invested with honours and titles. But the narrow and obscure streets of this city, the confined situation of its buildings, most of which have not even the convenience of a yard, and the annual inundations in spring, all conspire to render

render it extremely unwholesome, and for ever to prevent any effectual improvements. I likewise cannot speak favourably of the moral character of its inhabitants, whether male or female. A continual habit of good living, indolence, and debauchery, the natural consequences of the superfluity, which the excellent possessions of this free militia afford, have thoroughly corrupted their manners, and their antient simplicity has been almost entirely superseded by luxury. Here, as in other countries, the capital is the seat of corruption, which gradually infects the mass of the people. The distinctions and privileges, which have in later times been too liberally granted to the higher ranks, have rendered these, as well as the people, proud and insolent. The former, who have established villages on the beautiful tracts of land granted to them on the eastern bank of the Don, and encouraged vagrants to settle there, endeavour to oppress the poorer class of inhabitants, by imposing upon them all the burthens of military duty; though they spare the more wealthy, whose common interest it is to deprive the latter frequently even of the payments due for their services. The discontent resulting from this conduct is construed by their superiors into want of obedience and mutiny, so that it is productive of additional oppression. Thus a people naturally well disposed, and who have hitherto been very useful to Russia in furnishing the empire with light troops, are continually more injured in their free constitution, and daily shew greater aversion to military service; while their affluent governors live in the most voluptuous indolence and immorality.

The only branch of husbandry, which has been actually improved by the wealthy among the Kozaks of the Don, is the
vine;

vine; the production of which, during the last twenty years, has not only been considerably increased, but its cultivation is likewise placed on a more respectable footing; because it contributes towards the indulgence of their sensuality. The vine thrives rapidly above Tsherkaſk, as the heights near the right bank of the Don are well ſituated for its growth, and extend to the vicinity of Patifbankaya Stanitza, ſo that they lie in about the ſame latitude as Tzaritzyn. In a more ſouthern ſituation near Taganrog, the grapes, on account of the cold ſea winds, never arrive at a proper ſtate of maturity; and therefore do not afford a good muſt. On the contrary, the white wines of Raſdorof and Tzymłanſki, which are ſo much eſteemed near the Don, and reſemble the red Italian wines, are both ſold at a high price, even at Moſco. The common black grapes growing in the neighbourhood of the Don produce a ſpirituous wine, which is of a flavour ſuperior to thoſe obtained at Aſtrakhan, and in the environs of the Terek: theſe grapes are transported by water, from the villages ſituated near the Upper Don, to Tſherkaſk where we found the Greek merchants induſtriouſly employed in preſſing them. It deſerves, however, to be remarked, that this wine is indebted for its excellence to a ſecret addition of Raiſins, as well as to the juice of the bramble-berry, and honey; ingredients with which the muſt is uſually boiled. The advantage poſſeſſed by the pure and unadulterated wines made near the Don, may be attributed to two principal cauſes: firſt, to the early maturity of the ſpecies of Raiſins uniformly cultivated there; and ſecondly, becauſe all the vineyards are planted on the ſouthern declivity of the heights and banks of the river Don, in a good marly and calcareous

calcareous soil, and are not watered like those in the isles near Astrakhan, which are impregnated with salt. Many improvements have also, in later times, been made by the inhabitants of those countries, in the management of wines; and there is no doubt that they will, at a future period, produce that liquor of an excellent quality. Although the produce of that commodity is at present too inconsiderable, and its sale too rapid, to encourage the natives to preserve it till it is of a proper age, yet during the present extension of the Southern Empire, and particularly by the support given to population and the culture of the vine on the mountains of Taurida, this branch of productive industry, in the course of a few generations, might be so much promoted, that the interior of Russia, and Mosco itself, could altogether dispense with the importation of foreign wines.—The places where the vine was first cultivated on the banks of the Don, are, Besergenefskoi, Rasdori, Melekhofskoi, and Solotofskoi. Its cultivation, however, has of late considerably increased, as in the year 1772 there were only from seventy to eighty hogsheds, or casks, of forty eimers each, pressed along the whole extent of the Don; and fifty of these were produced in the village of Rasdori alone. The manner, however, of planting vineyards near the Don, as well as in the vicinity of Astrakhan, and on the banks of the Terek, is attended with great difficulties, because the vines, to protect them against frost, must be buried during the winter, and dug up again in the spring; a process which in the southern vallies of the Crimea, and in almost the whole of this peninsula, is not necessary.

The culture of madder might also be of great importance to the Kozaks of the Don, especially as it is not incompatible with an unsettled military life. At present, however, they only attempt to procure the wild roots of this plant for the purpose of dyeing; but after a whole day's labour they seldom obtain more than two pounds weight; whereas this useful article, if cultivated in regular fields, would be attended with much greater advantage.

The unhealthy situation of Tsherkask, on the isles of the Don, may be easily conceived; as the whole town, a few principal places contiguous to the cathedral excepted, is inundated by the spring-tides from the beginning of April to the end of June, infomuch that the ground-floors of the houses built of wood, and which generally serve as store-houses for containing provisions, are entirely under water, so that the inhabitants are obliged to employ boats in maintaining their intercourse with each other.

In a clear evening, the northern promontory of the Caucasus may be distinctly seen from Tsherkask; the summits of the snowy mountains also appear glimmering and obscure, though, in a direct line from thence to the river Kuban, the distance is computed to be upwards of two hundred and forty versts, and consequently three long days' journey on horseback. The visible part of the mountains appears to be that branch which extends above the Laba, and takes its direction towards the sea.

Tsherkask consists of eleven Kozak stanitzes, or hamlets; and the whole body of the Kozacks of the Don inhabits one hundred such stanitzes. The village of Akfai, which is situated

situated fifteen versts below Tsherkask, is included within the jurisdiction of that town. The Tartar Slobode, which forms a part of Tsherkask, consists of one hundred and fifty families. These Tartars have resided here for many ages, and are said to have been the primitive inhabitants of the place. They enjoy the same privileges as the Kozaks, are a wealthy people, and still preserve their language as well as their religion.

The city of Tsherkask has an extensive trade by sea, and might become a still more important commercial place, if the general quarantine at Kertsch, which has long since been proposed for all the ports situated on the coast of Azof, could be effectually established. The small vessels used in the navigation of the river Don, might convey in abundance, to Kertsch all the articles for exportation, such as grain, iron, masts, timber, sail-cloth, hemp, tallow, and butter. These goods coming by the Volga and the Kama, near Katschalinskaya Stanitza, would have but a short distance to be carried by land, and might then be transported entirely by water through the Vorona, and its rivers, into the Don. Large vessels from the Mediterranean might proceed directly to Kertsch, and take in cargoes of the above-mentioned articles, by which the charge of freight would be considerably diminished. All the ports of the Mediterranean, which, particularly in naval wars, procure the Russian products with incalculable expence and great danger by the Baltic Sea, would exclusively resort to this place; a change which might be attended with great advantage to the southern provinces of Russia. On the the contrary, the commerce of Taganrog is far from being beneficial, as the navigation on the Sea of Azof, as well as that of the Bosphorus, on account of

their shallow waters, can be carried on only in small merchant vessels ; and as Taganrog itself obtains the goods before mentioned only by boats navigated on the river Don.

The dress of the Kozak women and girls at Tsherkask, and in the neighbouring stanitzes, differs in every respect from that worn above the Lines of Tzaritzyn.

It is a complete *dehabille* of a peculiar kind, as is obvious from the twenty-third Plate, where a matron and a girl are represented. In their domestic employments they go barefooted, and wear trowsers, which hang down as low as the ankles. When in full dress, they wear slippers and stockings of yellow morocco, in the latter of which they tuck the extremities of their trowsers ; white linen is scarcely ever used by them, except among the poor. The shifts are commonly made of dyed cotton, or Asiatic silk stuffs, either of a yellow or blue colour. That part of the female dress which is visible under the gown, as well as the exposed part of the sleeves, together with the neck-cloth, is generally made of muslin, but the other articles consist of an inferior manufacture.

About thirty or thirty-five years ago the women usually wore large triangular head-dresses, which were nearly eighteen inches in height, and of a similar breadth below, when measured from one angle to the other. At present, the head-dress, in general, corresponds with that represented in the plate ; and those before mentioned are worn only in the vicinity of Severnoi Donetz.

I spent only one day, namely, the 30th of September, at Tsherkask. On the first of October, the weather having again become fair, I proceeded on my journey to Taganrog. — After
leaving

leaving Tsherkask, we crossed a large valley, which, in the spring, is for the greatest part inundated, so that travellers are obliged to pass it by a long wooden bridge. We next arrived at a collateral branch of the Don, called Akfai, which is above one hundred fathoms broad, and abounds in lobsters: it surrounds the isle on which the town is built, and is provided with a floating bridge. Beyond this arm of water commences an elevated hilly country, containing a bed of a marly lime-stone, extending towards the declivity of the Don, but principally running in the same direction as the banks of the Akfai. It is evident that this high country formed the ancient shore of the Sea of Azof, at a time when it was united with the Caspian; and the ancient mouth of the Don has probably been above the Manyth. — At a distance of fifteen versts, and on the declivity of this elevated country, the small Kozak village, or stanitz, called Akfai, is beautifully situated, in the form of an amphitheatre: it has a handsome modern church, built of free-stone, and also an old one erected of wood. The quadrangular stones used for the construction of the church, and some elegant houses, are hewn from the lime-stone quarry on the eminence before mentioned, which consists of shelly fragments and small grained oolites, originating from an innumerable and uniform congeries of small shells: the stratum is irregular, and frequently breaks in layers upwards of nine inches thick. — Immediately behind this stanitz, we ascended the elevation, which is intersected by small glens, and presents two roads leading to the fortrefs of Rostov. One of these is tolerably level, and runs over the flat part of the eminence; the other is nearer towards the bank of the river Don, and leads over two deep

deep and dangerous defiles, called Kobakovka and Kifiterinka; through the former of which runs a small brook, but the latter was now in a dry state, and uncommonly excavated. — I made choice of that last mentioned, which conducted us, soon after passing the second defile, to the new Armenian town of Nakhtshivan, fourteen versts distant from the last stage: this was the first Armenian town established in the Russian Empire during the mild government of the great Empress CATHERINE II. and is one of the most promising new colonies. The industry of the Armenians in manufactures, trade, and commerce, is so conspicuous, when compared with those of the Russians, Greeks, and even the principal German colonists, that a true patriot cannot suppress the ardent wish that the whole race of Armenians, at present so much oppressed, were transported from the plain of Aras to Russia; a change to which they, under proper arrangements, might be easily induced to submit.

The town of Nakhtshivan was founded by the most opulent Armenian mechanics and merchants, who had emigrated after the peace of Kutshuk-Kainardshi, when the Russian troops, under the command of General SUWAROF, withdrew from the Crimea: at that time the major part of the Christian inhabitants, on whom the whole of the productive industry and commerce of the peninsula depended, left that country, though probably not with unanimous consent, late in autumn, at the instigation of the Greeks who dwelt on the southern mountainous shore, and were apprehensive of the incursions of the Tartars. Instead of the original huts which, contrary to the intentions of the Sovereign, the treacherous commissaries had constructed in the most expeditious and wretched manner,
and

and of which I have seen sufficient proofs, the greater part of the inhabitants have now built neat and cleanly houses, mostly of freestone, and covered with tiles, in the manufacture of which they are skilful. They have, at their own expence, erected in the middle of the place a regular town-house, and a square of convenient shops, where all the common productions of that country, as well as provisions, and especially bread, are exposed to sale: it is remarkable that the bread is here, according to the Asiatic custom, publicly kneaded and baked; a process open to the inspection of every person. There is a great intercourse between this place and the neighbouring countries, especially as there are but few of the lower order of mechanics among the Kozaks. The town has three churches, and in the vicinity of fort Rostov is a well-built convent, and a handsome church, both of freestone. Its streets are regularly divided: the houses are at a proper distance from each other, and possess every convenience. Even the buildings constructed of wood are plastered with mortar, covered with tiles, and thus secured against accidents by fire.—The major part of the inhabitants are merchants or respectable tradesmen, such as Morocco manufacturers, excellent tailors, cartwrights, black and white smiths, weavers, joiners, potters, masons, and others. Bread of a superior quality, whether of rye or wheat, is prepared in this town; though the Russians themselves are, of all European nations, the most unskilful bakers. Taurida has, by the emigration of these ingenious mechanics, suffered a considered loss, which has been severely felt ever since its conquest by Russia. On their first settlement at Nakhtshivan a building was erected for the dyeing of cloth.

cloth. The town is situated at the distance of one verst to the East of fort Rostov, on the same elevated plain; and, at the margin of the steep terrace extending to the valley, it represents as it were a suburb of the former. On the open eminence we remarked several round wind-mills, constructed in the Asiatic manner, with horizontal wings, which were acted upon by the different winds, and regulated according to their strength and direction, by means of a circular apparatus furnished with moveable transverse boards: an invention the merit of which is claimed by the Armenians. In the Crimea we observed several of these wind-mills in motion, especially in the vicinity of Koslof and Eupatoria: from the representation given in the twelfth Vignette, the reader may form a faint idea of their construction.

With agreeable sensations, on observing the prosperous state of this colony, which is apparently protected by the hand of Providence, I proceeded to the fortress St. Dmitriya Rostovskago, about one verst distant; but, as GULDENSTADT had formerly described it, I pursued my journey immediately after changing horses.

This fortress is much neglected, though it appears to be of importance, not only as a barrier against the Kozaks of the Don, but likewise for securing the mouth of the river, as well as for collecting the toll: it lies in an open country, and has a cathedral built on a small elevation, on the western declivity of which is situated a considerable suburb, with three churches. The post-house, during the summer season, is established beyond the precincts of the town, and the mail is conducted by the Kozaks of the Don, whose territory consists

of the small tract of ground on which the fort is built, together with that belonging to the Armenian Slobodes, or villages, in its vicinity.

From this place we again descended the stratified heights, and crossed the deep valley through which the rivulet Temernik runs in a serpentine direction into the Akfai, or Donetz. The Armenian affessor Avramof, of Nakhtshivan, has confined the water of this rivulet in a narrow part of the valley by a short dyke, constructed of freestone; he has also built an excellent mill with three small overshot wheels, and established a farm as well as a common inn.

After passing the Temernik, we proceeded over a flat elevation, which continued to rise towards the Don, till we arrived at Mokroi Tshaltyr, or the wet Tshaltyr, on the banks of which is a parochial village, or Slobode, of the same name, belonging to the Armenians, twenty-five versts distant from our last stage. This is one of the five Armenian colonies which, together with that of Nakhtshivan, were established by the husbandmen who emigrated from the Crimea. It consists of ninety houses, several of which are built of freestone and clay: each of them contains, according to the Crimean manner, a vestibule with a chimney, a cleanly sitting-room whitewashed, and a bed-chamber, with a low oven: their yards have every convenience, such as stalls for cattle, made of wickerwork, and properly covered, cellars and other offices. The church is erected of stone, but without a tower. Industry, sobriety, and a good moral conduct, characterize the Armenian peasants; it is however to be regretted, that their territory is too confined, and entirely destitute of fire-wood, as well as that used

for the implements of husbandry ; while the envious Kozaks will not suffer them to supply the want of fuel, by the rushes growing on the low countries near the inlets of the Don, though these unprincipled neighbours make no use of that plentiful article. The Armenians cultivate scarcely any other grain but wheat, spelt, and millet ; and as only a few of them understand the Russian language, they are obliged to sell these productions to their countrymen at Nakhtshivan, who convey the wheat by water to Taganrog, whence it is advantageously exported. Among their live stock we also observed a few buffaloes ; but this animal will not thrive in an open country, where it finds neither a moist pasturage, nor shade to protect it from the heat and vermin of summer, and where the winter is too cold for its constitution.

Of the other Armenian villages belonging to the district of Rostov, I shall mention the following : namley, Koshku, which contains ninety houses, only one verst and a half distant from Tshaltyr ; Verkhnei Koshku, which has fifty houses ; Sultan Sala, and Nefvatai, on the banks of the rivulet Tuslof. The whole Armenian population of this district, including Nakhtshivan, may be computed at about seven thousand persons of both sexes ; of these the major part formerly dwelt in Taurida, in the vicinity of Karassubasar, where they composed the great Slobode or village of Uortalank : to which place both old and young are extremely anxious to return.

On the second of October we travelled over considerable stratified ridges, between which run the glens and rivulets called Safianova, Kamenka, and Sinavka : in all these, as likewise in some places near the Temernik and Tshaltyr, we could distinctly

distinctly trace the stratification of lime-stone, which was almost uniformly composed of small shells, or grains, resembling oolites.

In order to erect buildings for the Brigadier of Kozaks, M. MARTIANOF, a quantity of a friable freestone, consisting of broken and half calcined shells, had been hewn in the Kamenska. This fossil is obtained on an eminence, immediately below the turf, in beds of about twelve inches thick, of different degrees of hardness, generally of a yellow colour, and of a marly texture.

Sinavka, formerly called Donetzkoï Tshulek, has received its present name from Admiral SINAVIN, who, during the former Turkish war, had the chief command on the Sea of Azof: he established here, at his own expence, several farms, which he afterwards sold to the above-mentioned M. Martianof. This gentleman, having augmented the population with a number of vagrants and peasants, has founded three villages, one in this delightful country, another on the banks of the Sinavka, and a third on those of the Morskoi Tshulek, in each of which places he has introduced an excellent system of economy.

To the West of the Don we lost sight of several deep-rooted plants, probably on account of the calcareous basis of the soil: we also missed the *Crambe orientalis* and *Statice Coriaria*; with the roots of which the tanners of Tsherkask and Nakhtshivan prepare leather for the soles of shoes: these useful vegetable productions, however, re-appear on the banks of the Dniepr. The marine plants also, and those species of wormwood which delight in a saline soil, were no longer discoverable in this fertile country; on the contrary, we met with the large worm-

wood, which is not indigenous to the steppes we formerly visited.

Our next stage of twenty-five versts brought us near the Morskoi Tshulek, which, from Tsherkask, is the first rivulet that empties itself directly into the Sea of Azof: here the calcareous bed presents rocky declivities, and the steep sides of the valley are covered with numerous black-thorns.—The following stage, on the banks of the Sambek, which was charged to us for twenty versts, does not appear to be at so great a distance: we proceeded to it over an elevated plain, the basis of which is a calcareous stratum, as is obvious from its surface, in the vicinity of the Sambek. This is a small, though important river, because it forms the frontier of the Kozaks of the Don, and separates the district belonging to the fortress of Taganrog: several villages which produce grain in abundance are established here by the landed proprietors; nevertheless a desætine of ground, containing two thousand four hundred square fathoms, may still be purchased of the antient possessors for the small price of half a ruble. The Sambek runs between steep banks, is very deep and rapid in spring, and abounds in fish. Besides the post-house, we met here with a common tavern; and, on ascending farther, with a farm. We were informed that vestiges of a Tartarian building are found in the vicinity of the Sambek. From this place to the fortress of Taganrog, the distance is computed to be fifteen versts, which we travelled on the same day before twilight, over an uneven steppe, after crossing the rivulet Malovaya and the marshy Tsherepakha, near which we observed a beautiful orchard.

Fort Taganrog, or, as it is called in the records of Chancery, Troitzkaya Krepost na Taganroge, is situated on the highest part of an isthmus, which, being intersected by glens extending towards the sea, terminates like a promontory in the bay into which the Don discharges itself: in serene weather the fortress of Azof may be distinctly seen opposite to this place. The neck of land is, on the sea-side, as far as the bay, or Liman of the Mius, divided by an entrenchment, which is occupied by a Sastava, or a guard for the collection of tolls. By order of Peter the Great, this fort was constructed according to a regular plan of fortification, on the round and elevated extremity of the isthmus, above the naval harbour; it consists of three entire and two semi-bastions, four ravelins and several batteries on the steep sea-side, and is inaccessible there, as the bank forms a precipice upwards of fifteen fathoms high: on the land side it has considerable ramparts and deep fosses, partly strengthened with inner walls, but in an unfinished state. Being no longer considered as a bulwark against the Turks, its walls, as well as the bridges leading across the fosses, are suffered gradually to decay. A similar fate threatens most of the buildings belonging to the Crown in the interior of the fortress; and the Commandant KASPAROF, a native of Armenia, has been under the necessity of erecting a house for his residence, without the precincts of the fortress, in the agreeable northern valley near the sea, where he has also planted a vineyard, an orchard, and a beautiful nursery of several hundred mulberry-trees. According to the original plan, the suburb on the land side was proposed to be built in regular streets, crossing each other at right angles, over the whole

whole fortrefs ; but, except those streets which extend along the sea in a northern direction, and the southern part of the town which is occupied by marines, the houses are, in general, ill-constructed, and almost uniformly of wood. The timber, however, is conveyed on the Don at a considerable expence, a great part of which might be saved, if there was not such a scarcity of day-labourers in this country, who might be advantageously employed in breaking stones on the shore, as well as in working at lime-kilns.

The market of Taganrog is spacious, and contains numerous wooden shops : the Greeks possess a particular row of booths, where, according to the Eastern custom, they keep small taverns and coffee-houses, which are chiefly frequented by sailors. Besides the principal church, within the fortrefs, there are two others : one for the divine service of the Russians towards the land side ; and another belonging to the Greeks, and contiguous to the sea ; the latter having been recently erected, as the masons were still at work, in finishing its walls of freestone. From the northern side of the valley, which contains the house of the Governor, the town commands a fine prospect, which is represented in the twenty-fifth Plate. On the same side, but towards the low country contiguous to the sea-shore, are squares of shops, or booths, called the Exchange, where the captains of vessels, and ship-owners, expose their merchandize to sale. Next to this place is the wharf, where we took notice of several merchant vessels constructed in the form of pinks, completely armed, and worth from sixteen to eighteen thousand rubles each. On the contrary, the hospital for performing quarantine is situated to the West of the naval port,



port, immediately below the fortrefs, on the open wharf: here Peter the Great laid the foundation of a pier, which at low water ftill projects confiderably above the level of the fea; but has never been properly finifhed. It is therefore to be regretted, that a work which might be eafily completed, and which could not fail to contribute to the profperity of commerce, is now entirely neglected.

The number of the inhabitants of Taganrog amounts to about fix thoufand; two thoufand of which are in the maritime fervice, fubject to the orders of the Port Captain, fifteen hundred belong to the garrifon commanded by the Governor, and the remainder confifts of merchants: the moft numerous of thefe are the Greeks, who have emigrated from Nefhin and other foreign parts, and are exempt from the duty of providing quarters for foldiers, while they enjoy the privilege of choofing their own magiftrates. Several Greek families had lately come thither, and fettled among their countrymen. A Greek from Zante brought with him all the implements and workmen neceffary for eftablifhing a manufactory of macaroni; an article which he believed might be advantageoufly exported. Several noblemen of the neighbourhood have purchafed houfes for the refidence of their ftewards, in order to facilitate the fale and exportation of the produce of their eftates.

Although the late Prince GRIGORY ALEXANDROVITSH POTEKIN TAURITSHESKYI had a decided predilection for his favourite town of Kherfon, and fhewed fuch indifference for Taganrog, that he would even have ruined it without hesitation; yet the neceffity of fupporting the latter place, independently of its commercial advantages, was very obvious during the laft war
with

with the Ottoman Porte, when masts, iron, timber, and other materials for ship-building, could frequently, on pressing occasions, be obtained from no other port than that of Taganrog. Even at present, a great part of the iron, ship-timber, and other useful articles which arrive by the Don and the Volga from Siberia, are transported by sea from this place to Kherfon, Nikolaëf, Odeffa, and Sevastopol, for the use of the Russian Navy. Among other articles, the merchants of Taganrog have lately begun to export a species of pit-coal, exactly similar to that of Scotland, and which readily burns to cinders. This fossil is found in horizontal beds, near the sources of the Krynka and Severnoi Donetz, at a distance of one hundred and twenty versts from Taganrog; it is also obtained from mines worked on the banks of the rivulet Skrynovka, not far from the Donetz; whence it is brought by land, and afterwards transported in boats to Nikolaëf and Kherfon, for the use of the anchor-smiths. It is however certain, that though the newly discovered coal burns perfectly well in a fire-place, when once properly kindled, yet it is soon extinguished by blowing, so that even the expert English smiths cannot make use of it.

The port of this place, when considered with respect to the advantages of internal communication, and the numerous productions of the neighbouring governments, is not only of great consequence to the marine of the Black Sea, but almost indispensably necessary to the interests of the empire. Still greater benefits, however, might be derived from a more direct communication between the Don and the Volga. Frigates, carrying from forty to fifty guns, and thirty-six pounders on the lower decks, have hitherto been built by

contract, on the wharfs of Taganrog, and those established near the mouth of the Don : they cost Government one hundred and fifty thousand rubles each, when entirely equipped ; a price much lower than they could be furnished at, if undertaken by the officers of the Crown. For this purpose, the wood hitherto employed has been procured from the forests of Teplinski, and those known by the name of Leontievy Balky, near the source of the Mius : it is thence transported partly on the Volga, and partly by land, to Katthalinskaya Stanitza, near the Don ; down which river it is conveyed to the wharfs. The masts are brought from the Kama, and transported on the Volga ; but the expence of their land-carriage from the banks of the latter to the river Don is very great. The last frigates built at this place were finished in the summer of 1793 ; and one of these was now ready to sail for Kertsch : here they generally unload part of their cargo, and are towed in by camels ; because they draw somewhat more than thirteen feet and a half of water, the greatest depth in the navigation of the Bosphorus.

With respect to the maritime commerce carried on with the states belonging to the Ottoman Porte, as well as with the whole Mediterranean coast, Taganrog may be considered as an advantageous place to the interests of Russia. It will become still more important during a general peace, when the great profits arising from the exportation of Russian goods will be more generally understood, and the number of industrious merchants and factors consequently increase ; but especially if a reciprocal trade could be established between the ports of Taganrog and Theodosia, or Kertsch, where the larger kind of

vessels might safely land in all seasons, and be freighted at a moderate expence with the bulky productions of Russia. The commerce of this place has been revived only since the last peace with the Turks; so that in the year 1792 the number of merchantmen which arrived at this port amounted to sixty; and by the tenth of October in the present year (1793) there have already resorted hither eighty vessels; several of which having two, and some even three masts, were at this late season taking in their cargoes. Among this number there were only six Russian ships; as the principal part consisted of traders from Greece, chiefly from the Venetian islands, Turkey, Ragusa, and the Imperial and Neapolitan states. All these, except the vessels of the German nation, carry Russian colours; the privilege of which is expertly obtained from our envoys and governors, under the false pretence of carrying Russian property, though there be in reality but a small or no share of the cargo belonging to the merchants of Russia. By such abuses, which are perhaps inevitable during the first establishment of this maritime trade, the ascendancy of the Russians, in their commercial intercourse with the Black and Mediterranean Seas, is for ever prevented; and those emoluments and prerogatives of the Russian Flag, which are due to the ship-owners in their sea-trade with Turkey, are consequently enjoyed by strangers. These advantages are so considerable, that the vessels sailing under the Turkish flag are paid at about one-third less for their freight, computed per Kantar*, because they are obliged to sell

* The Kantar is reckoned at three pood and twelve pounds, or one hundred and thirty-two Russian pounds.

their cargoes at Constantinople, for the subsisting market-price in that city, while the privilege enjoyed by the Russian flag leaves the captain of the vessel at liberty not to discharge the cargo, if he should consider the current prices too low for his goods, but to proceed directly to the isles of the Archipelago and the Mediterranean, where the price of wheat is generally higher. All the merchantmen of Taganrog have two or three masts, draw from ten to twelve feet of water, and the crew of each vessel consists of ten or more sailors. Those which are of still greater burthen, do not take in their full cargoes at this port; but, after passing the Bosphorus, occasionally complete them at Theodosia. The voyage to or from Constantinople seldom exceeds eight days, though the masters of vessels frequently pretend to have been forty or even sixty days on their passage, in order to shorten the period of their quarantine. This deception might be attended with dangerous consequences to the interior of Russia, as that fatal distemper, the plague, cannot fail to be sooner or later introduced by such fraudulent practices: but, by establishing a general quarantine at Kertsch, which would effectually secure the Russian Empire against epidemic diseases, every danger might be averted; the quarantine establishments hitherto maintained on the coast of the Sea of Azof would, by the abovementioned arrangement, be rendered superfluous, and a considerable expence might be saved by Government.

The price of freight from Taganrog to Constantinople varies from one ruble, or less, to upwards of two rubles per kantar, according to circumstances. Hence the advantage

which the owners of ships derive from this navigation is very considerable, and the loss to Russia equally great, as she is in want of vessels for that trade. At this time, the insurance for the Black Sea was about five or six per cent. ; but in the preceding year, when, during a stormy period of a month, sixteen vessels had been shipwrecked on the coasts of Taurida, it suddenly rose to twenty per cent. ; and even at that enormous price, no underwriters could be obtained. Navigation is much interrupted here in the winter months, because the roads of Kertsh, and a great part of the Sea of Azof, are then covered with ice. From the mouth of the Don to the heights of Taganrog, the sea is every winter so completely frozen, that travellers go in carriages upon the ice with the greatest safety. The whole shore is also to a very considerable extent covered with ice, towards the East as far as Yeiskoi gorodok, and to the West as far as Petrofskoi Krepost ; it however often breaks in consequence of sea storms, and thus exposes the fishermen to the greatest danger, when following their business. The sea generally freezes in December, and remains in that state till the month of March ; but the shoals of ice in the Bosphorus delay navigation till a much later period of the spring.

Since the revival of this maritime trade of Russia, the exports and imports, according to the annexed account, have annually been valued at from half a million to a million of rubles ; but by far the greater part of this property consisted of articles exported. Although the custom-house registers have always appeared to me inaccurate, I shall communicate the following statement, as extracted from them.

Of

Rubles.

Of foreign merchandize, during the year 1792,						
were imported to the amount of	-	-	-	-	-	97,653
The productions of Russia exported during the						
same year were valued at	-	-	-	-	-	370,551
The duties on the firstmentioned merchandize						
amounted to	-	-	-	-	-	29,041
Ditto, on the lastmentioned atticles amounted to						7,307
In the course of the year 1793, the foreign goods						
imported were valued at	-	-	-	-	-	156,058
Ditto, the exports of Russia, at	-	-	-	-	-	428,087

A number of vessels arrive here from Constantinople, with the half or whole of their ballast, so that after taking in their full cargoes, without discharging the ballast, they are often in imminent danger. In a similar manner, ships resort hither from Kherfon, because it is of the greatest advantage to freight them at Taganrog with articles of exportation. The surplus of the balance is paid in ducats or bills of exchange; but as the commerce with Persia is not in favour of Russia, the greater part of specie is again exported to the former country by the way of Astrakhan.

If Taganrog were not almost entirely destitute of respectable and wealthy merchants, who had the means of establishing storehouses, and extending their credit, its advantageous situation would be of the greatest importance to the Empire; inasmuch as an active trade with Russian productions might be carried on to the Black Sea, and in a short time also to the different ports of the Mediterranean. The fertility of all the

neighbouring countries affords inexhaustible supplies for the exportation of corn : and this commerce is rendered still more profitable, by the communication which the rivers Don, Donetz, and Volga, with their collateral rivulets, open to those provinces of the Empire, which produce corn and other articles for foreign markets, at the most reasonable prices. Such indeed are the advantages resulting from this commercial intercourse, that they might be enjoyed even by Taurida, without any detriment to Taganrog, if the staple-trade, or the establishment of granaries above alluded to, could be carried into effect.

Among the principal articles of exportation from Taganrog, are the following, namely, iron, wheat, butter, tallow, ropes, and cordage, sail-cloth, hemp, Russian linen, salted and pressed caviar, salt-petre, Russian leather, or Youghten, undressed skins, which are exported only by smugglers, bristles, hare and other furs, &c. The Greek sailors purchase, for their own traffic, the bed-ticks manufactured at Satrapesnikof, coarse linen-cloth, small looking-glasses, and other trifles.

No port of the Black Sea can procure Siberian iron, and the goods cast of this metal, in such abundance, and at so cheap a rate, as that of Taganrog ; whither these articles are conveyed, first on the Volga as far as Dubovka, for a freight varying in price from one hundred and twenty-five to one hundred and thirty kopeeks per pood, and thence farther by land to Katschalina ; from which place they are again transported in boats on the Don, at the low rate of from thirteen to twenty kopeeks. Even butter has lately been obtained by such conveyance from Siberia, at a very reasonable price ; and tallow may likewise be procured in abundance, by the navigation of the Volga.

A con-

A considerable quantity of wheat has also been exported this year with uncommon advantage; and many cargoes of it have, probably in a clandestine manner, been carried into France. The grain which forms the principal object of exportation, is summer wheat, or, as it is called by the natives, Arnautka. In the small district of Taganrog, the few Nobles, though generally poor, produce by their tillage about twenty thousand Russian tchetverts of wheat, for the cultivation of which they chiefly employ day-labourers: the principal part of this grain, however, is obtained by land from the less remote districts of Kharkof and the Vorona, as well as from those of Ekaterinoslav; the waggons by which it is brought, take in return partly wine, and partly cotton goods and salt fish, which articles are thus conveyed to the interior parts of the country. An attempt has also been recently made, to send wheat from the Lines of Caucasus by the provision-waggons returning to Tsherkask, and afterwards to transport it by water. In fertile years, the price of this grain is here about three rubles the Russian kullo, being nearly seven pood and a half, or three hundred pounds weight: on account of the indifferent harvest of last year, 1792, and the great demand for exportation, the price of wheat advanced to four rubles and a half, for a similar measure. As there is no merchant at this port whose circumstances enable him to establish magazines, in order to promote this branch of commerce, and render it more lucrative, the captain of the ship, on his arrival here, or his correspondent, is obliged to send orders to all the neighbouring villages, to procure a cargo for the vessel. The price of freight from Taganrog to Constantinople is one hundred and ten parias, or one hundred and sixty-

sixty-five kopeeks per kullo, five of which make a Russian tshetvert. During this spring, and in the preceding year, the price of the tshetvert of wheat at Constantinople, and in the isles of the Archipelago, advanced to twenty-five piaftres; and though the late importation reduced it to fourteen piaftres, yet the profit was very confiderable, becaufe the tshetvert, at the place of fale, including the price of freight, coft the traders only nine piaftres.

The Turkish markets can fcarcely ever be fupplied with a fufficient quantity of butter; hence this article is in all the neighbouring countries fpeedily bought up for exportation, and conveyed, even from Siberia, in barges chiefly loaded with iron. It is transported in casks containing it in a melted ftate, and affords a greater profit than wheat; for it is generally fold in Constantinople at a price of nineteen or twenty rubles the pood, though it is purchafed at Taganrog for feven.

Wheat and butter are, therefore, articles which ought to pay a heavy duty, as the benefits derived from them fall into the ungrateful hands of foreign merchants. Ropes and cordage of different forts form another article of exportation; they are partly made at this place, and partly conveyed hither from other diftricts of Ruffia. With thefe, as well as with fail-cloth, coarfe linen, hemp, and flax, Taganrog will, if its fea-trade fhould increafe, be enabled to furnifh all the ports in the Mediterranean, at a lower rate, and of a much better quality, than they can at prefent be procured from the ports of the Baltic: in a fimilar manner even France and Spain might, during a naval war, be fafely and effectually fupplied with the commodities above fpecified. The ports of Kherfon and Odeffa might
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share this advantage with Taganrog, and likewise export the productions of the districts formerly belonging to Poland, but now under the sovereignty of Russia.

Pressed caviar, which is chiefly demanded for the Italian markets, has hitherto been exported from Astrakhan. It may however, in future, be procured at a lower price, and more expeditiously by water, from the Kozaks of Tshernomorsk, when their domestic economy will be more established. They have indeed begun to prepare it in a superior manner; the pood at present costs three rubles and a half.

In the southern countries of Europe, considerable quantities of *Ichthyocolla*, or isinglass, are used, in order to give a brilliant colour to their wines: this necessary ingredient is at present purchased from the English, who import it from Russia; though it might be obtained from the latter country, not only at a more reasonable rate, but through a much nearer channel. Russia leather, which is brought from Voronezh, costs at Taganrog sixteen rubles the pood; but red leather only is exported. There is, however, a smuggling trade publicly carried on with half-tanned leather, because the exportation of raw hides is prohibited: others equally cunning evade detection, by immersing the hides under water, previously to the sailing of the vessel to which they are fastened, and towing them through the sea, till they arrive at a distance convenient for removing them on ship-board. If, therefore, the exportation of raw leather were permitted, and made subject to the payment of a regular duty, Government would derive that benefit which is now enjoyed by smugglers, who are thus enabled to carry on their illicit practices.

Of less importance are the other articles of exportation ; though they may, with the gradual increase of the commerce of Taganrog, become objects of greater consequence than they are at present. The ports of the Mediterranean and the Levant might send hither with advantage for tallow, soap, linseed, salted and smoaked fish, salt meat, of which last article, however, only a small quantity has hitherto been exported, the soda of Astrakhan, potash, and pit-coal, besides a variety of other articles. Large masts for frigates and ships of war are conveyed to this port by the navigation of the Kuma, and are sold here at the price of one hundred rubles each ; these might become a valuable branch of exportation, if large vessels, freighted with such masts, were permitted to pass the Dardanelles : they could easily be sent on rafts, as far as Theodosia. — The export trade of this place is in every respect free ; so that previous to the last war, even cannons of cast iron, and saltpetre * from the Ukraine, were shipped for Constantinople ; a traffic which is still continued.

In taking a comparative view of the import and export trade of Taganrog, the balance is greatly in favour of Russia ; and the principal articles imported consist in wines of the common kind, called Byelomorskoi, or Santorino, as well as a small quantity of a better sort from Tenedos, Byzant, and other places of the Archipelago, Italy, and even from Spain : besides these, the Russians import dried fruits, marmelade made of boiled grapes, called Bekmefs, and that of other fruit, called

* Nitre could be purchased at this time, in a crude state, as it is imported from Little Russia and the Ukraine, at the price of two rubles and three quarters, or three rubles the pood, though it occasionally rises to four rubles and a half.

Nardenk ; Anadolian nuts, which are sent to the interior of the country ; gall nuts, called Balamut, which are imported for the use of the Morocco tanners of Nakhtshivan ; a few silk and cotton stuffs from Turkey, among which seldom are any of a superior kind ; fresh lemons ; oranges ; lemon juice, and rum.

Wines form the principal article of importation, and though procured at a very cheap rate, they generally are of so indifferent and strong a quality, that they are not relished at table : hence the merchants are obliged to send them either to the neighbouring provinces, where wines are scarce, or to convert them into brandy by distillation ; because four measures of this liquor commonly yield one of brandy. The Nardenk, and the Bekmefs, are also fermented for the same purpose, and distilled in an alembic ; but they afford only an inferior sort of brandy.

It may be easily understood, that on account of this small importation the balance of trade is very favourable to Russia. Hence it were to be wished, that this commerce might be increased by opulent merchants, who would promote the importation of silk and madder ; articles which we at present purchase from the Persians for ready money, and much to our disadvantage, while we ought to receive them in exchange for the productions of our country. If Spain, at some future period, could be supplied with her naval stores by the Black Sea, we might in return obtain, from the first market, her fine wool of Segovia for our woollen-cloth manufactories of Ekaterinoflav, as this wool is now imported at a great expence by

way of Peterfburg; and we might alfo receive, by the fame channel, all forts of drugs and dyeing materials; fuch as Peruvian bark, farfaparilla, indigo, cochineal, olive oil, cocoa, gall nuts, &c. An attempt has alfo been made to import hare-fkins to Taganrog, whence they are fent to foreign markets with confiderable profits, by the Baltic Sea. Notwithftanding the prohibition of the Ottoman Porte againft the exportation of copper from Anadolia, the low price of this article has induced the Ruffian traders to smuggle it out of the Turkish dominions, as it amply repays the additional expences attending its importation.

Having given an account of the trade of Taganrog, I fhall proceed to relate a few particulars refpecting the climate and foil of its environs: my obfervations will, for the moft part, apply alfo to the whole of that highly fertile country extending from the Sambek to the Kalmius, and beyond the fmall rivulet Berda, as well as northwards from the Sea of Azof to the Severnoi Donetz. Since the dominion of the Tartars has been abolifhed, and thofe wandering hordes, hitherto fo dangerous to the neighbouring countries, have been converted into induftrious fubjects, this excellent tract of land, which formerly was fuffered to lie wafte, deferves to be diligently cultivated; efpecially as there is too great a proportion of colonifts in many lefs fertile diftricts, and as the opportunities of exporting the produce of that invaluable foil are equally convenient and advantageous. The country round Taganrog is fo fertile that,

in a recently tilled soil, wheat may be sown without manure during four or five successive years; its crops frequently are from twenty to thirty fold; and in good seasons, even thirty-eight grains are obtained from one. The harvest of the present year afforded only a tenfold return, and was considered as an indifferent crop. There have been instances of six measures of millet having produced one hundred and twenty.—Good economists might cultivate gardens and plant all the useful species of trees for timber here, with the greatest facility; as the soil, which is sufficiently moist, is productive of a very luxuriant vegetation, and requires little or no labour. All kinds of fruit trees grow with astonishing rapidity, and afford excellent fruit, even without being grafted; especially apricots, cherries, and apples. The first of these, as well as peaches, thrive in the open air, but chestnut trees have sometimes been destroyed by the cold of this climate. On the contrary, all the species of the mulberry-tree prosper here uncommonly well; and I have had occasion to observe, in an extensive plantation of many hundred such trees reared from the seed, that most of them, though only from two to four years old, were yet sufficiently large to furnish food for the nutriment of the silk-worm. This tree begins to sprout about the 10th day of May; a period by which the inhabitants regulate themselves with respect to the hatching of the worms; the time of their feeding generally extends to the 10th day of June, when they have attained their full size, and begin to spin large *cocons*, or clews of silk. When these insects are fed with the branches, as is practised in Persia and Boukharra, the tree has scarcely time sufficient to recover
its

its new shoots previously to the beginning of autumn, and to bring their leaves to maturity. Nevertheless, this valuable tree can be propagated in the more northern latitudes of Russia. The cold sea-winds, however, are very detrimental here to the growth of the mulberry-tree, as well as to the cultivation of the vine; hence the grapes seldom become perfectly ripe. It were to be wished that the Greeks and Armenians, established in the districts of Taganrog and Rostov, could be encouraged by premiums, and other advantages, to devote themselves to both these branches of horticulture, for which those two nations possess peculiar talents.

Plantations of oak and elm, as well as all kinds of nursery-trees, might be cultivated in every part of this fertile country, and thus the scarcity of wood be easily supplied. Government would derive incalculable advantages, if the oak could be produced in a country which is so contiguous to the sea; especially when it is considered, that the extravagant sum of sixty-five thousand rubles was paid, merely for transporting the timber requisite for building a ship of war of fifty guns, to the wharf of fort Rostov.

As there is an obvious want of timber for the establishment of villages, it would be advisable to adopt the method of building practised in Taurida; which consists in the use of crude lime-stone and clay; but in places where this stone cannot be procured, unburnt bricks, or wicker-work plastered with clay, might be substituted. Walls erected of unburnt bricks are, no doubt, more advantageous, durable, and cleanly, than those made of earth and mud. To facilitate still more the manufacture
of

of such bricks, large moulds of three or four fathoms in length, with transverse boards, should be used; by means of which from twenty to thirty bricks may be formed at each filling of the moulds. Very durable stoves and vaults may be constructed of these bricks, especially when they have been perfectly dried.

Abundant and luxuriant weeds, called Burian, grow in every part of this country, but especially in low situations, and fallow grounds: they are usefully employed as a substitute for fuel, even at Taganrog, where the price of wood is excessive*; and as no arrangements have yet been made to procure the pit-coal from the neighbourhood, most of the principal houses use such weeds made into faggots; which are collected in autumn on fallow lands, carried to town, and laid up in large heaps for the winter. These plants consist chiefly of the *Artemisia vulgaris*, *Cichorium*, *Arctium*, *Verbascum nigrum*, *Dipsacus sylvestris*, *Daucus mauritanicus*, *Conium maculosum*, several species of the *Centaurea*, wild hemp, milfoil, the *Althea*, *Leonurus cardiaca*, *Lavatera thuringica*, *Eryngium campestre*, *Carduus ferratuloides*, and *Atriplex laciniata*. They afford a greater degree of heat than the rush; about twenty-five, or, in the coldest weather, fifty of these faggots, though each of them is not larger than the circumference of both hands, warm the room by their con-

* Small quantities of fire-wood and charcoal, for the use of ships, as well as the kitchen, are brought to Taganrog on the river Donetz: the former costs from ten to twelve rubles the fathom: barks or beams are also conveyed to this place on the Volga and the Don; they are sold at the rate of three rubles and upwards each.

flagration in a few minutes, produce a considerable proportion of cinders, and consequently a permanent heat, as the ovens are but thinly plastered. Besides this excellent property, the combustion of those weeds does not contaminate the air with disagreeable smoke or exhalations, but, on the contrary, perfumes the apartment with an agreeable odour. The only inconvenience attending the use of those herbs, is the trouble of making them into faggots, and frequently clearing the hearth of their ashes; which last, however, on account of their strength, might be usefully employed in the manufacture of pot-ash and salt-petre. An attempt has been made by those Noblemen who possess vast quantities of grain, to establish distilleries for brandy, and to use pit-coal as well as dung for heating the stills; but the fire made of the latter, especially when collected from sheep, corrodes and quickly penetrates the copper stills, while that of pit-coal cannot be duly moderated, and frequently melts the vessels.

It is not uncommon to meet with pit-coal in the vicinity of the Donetz, and towards the North of Taganrog, beyond the sources of the rivers which empty themselves into the Black Sea. This useful fossil has also been lately found in the environs of Tor and Bakhmut, as well as in several other places. Beyond the sources of the Mius and the Krynka, the country rises and forms more lofty mountains of schistus, layers of which are frequently observed on their tops: the heights, however,

however, precipitately decline near the Severnoi Donetz, so that the opposite side presents level meadows. Small beds of pit-coal are found in several parts of this country, almost on the surface. Such strata have likewise been discovered near the source of the Mius, eighty versts from Taganrog, in what are called the Leontievy Balky; they consist of superficial thin layers, which do not afford a prospect of repaying the expences of labour; but, if we may judge from the analogy subsisting between this and other countries, though often liable to exceptions, it is probable that there exist here much deeper and better stratifications. In a state not unlike the former, thin beds of coal appear in the gutters made by the rain-water around the source of the Krynka, which falls into the Mius. Near the rivulet Byelaya, that empties itself into the Lugan of the Donetz, at a distance of one hundred and fifty versts from Taganrog, a bed of inferior slate-coal, four fathoms thick, presents itself distinctly in a glen containing rain-water; and another less capacious one, but of a better quality, has been found at the depth of ten fathoms from the surface, beneath a black schistus, which is partly laminated, and partly breaks in thick plates: the whole belongs to the estate of the Assessor STERITSH.—Between the beds of coal were large and small lumps of pyrites, among which we found flat and light pieces of a similar fossil, internally black, and presenting small needles in their fracture: on exposing them to the action of fire, they did not burn with a flame, but emitted a strong sulphureous vapour. The best kind of coal, which is at present worked for the Admiralty, is obtained from the pits near the rivulet

Skrynovka, distant one hundred and twenty versts from Taganrog, and not far from the Severnoi Donetz, where coals have also been discovered in the vicinity of several other springs. They are conveyed by land to the port of Taganrog, and resemble in property the best Scotch coal, which burns to ashes; and, as they kindle with difficulty, their combustion is slow, and affords a strong and lasting heat: on account of this circumstance, however, such coals cannot be used with advantage by the smith, being unmanageable with the bellows. They break in large masses, resembling in fracture common pitch, but frequently taking a semi-radiated direction in the pits. Of a similar kind are said to be the coals found in the environs of the small rivers Toretz and Bakhmut.

The whole extent of country situated between the Don and the small river Berda, towards the North of the Sea of Azof, is composed of calcareous and marly strata, which generally form the high shores of the sea. On the elevated isthmus, on which the town and fortrefs of Taganrog are built, these stratifications are interrupted by the land. The steep bank is of a perpendicular height, from ten to eleven fathoms, and consists of a yellowish clay on its surface, but of a mixture of common marine layers at its basis. On examining the strata along the sea-side, we observed that the lowermost was generally a bed of solid stony marl, from three and a half to seven feet thick, and interspersed with a few shells; a fossil which is principally used for building. Immediately above it followed alternate thin layers of shell-lime of various degrees of hardness. Between the latter, and above them, were inconsiderable

siderable strata of pure sand, often mixed with shells, known by the name of *Helices*, which are also abundantly met with in the Don, yet much above the highest level of the sea. At intervals we took notice of strata of a coarse ferruginous sand; and in one of these I found half an elephant's tooth completely petrified. Above them were beds of a grey and yellow Fuller's earth, but occasionally again of chalk and marl. In the shell-lime we observed but a few different kinds of shells, some varieties of the *Chama*, one species of the *Cardium*, and the common pectinites, few of which were perfectly calcined, most of them in fragments, and mixed with innumerable grains of the size of millet, apparently originating from a cretaceous sand, and partly from small snail-shells. There is no doubt, that the mixed beds, which are situated above the hard marly stratum, but seldom to a great extent, have been formerly deposited by a more elevated sea, or carried thither by inundations; as they are found in no order, but often interrupted, and not horizontally disposed. Several wells have been dug through these successive layers of earth, clay, and lime-stone, within the fortrefs, as well as in its vicinity, to the depth of seventeen and even twenty-four fathoms: their springs rise from a bed of sand-stone, which lies below the *niveau*, or level of the sea. Some of these wells contain brackish water, particularly that dug in the fortrefs; but that discovered in the valley, eastwards of this place in a garden belonging to the Commandant, is more potable, as it passes through a clayey soil, at the inconsiderable depth of four or five fathoms.

Near Taganrog the sea is of a greenish colour, and not very salt, on account of the vicinity of the Don, so that its water may be used for washing and other domestic purposes. When the wind blows from the shore, the sea retreats to a considerable extent, and the vessels in the roads frequently lie sideways upon their keels, in a soft mud: but when the wind shifts to the opposite quarter, the sea rises to the base of the steep bank, which, in its softer parts, is undermined by the sea-water, while the stony parts are as it were excavated by the waves. The difference between the highest and lowest water amounts to about seven feet; three of which may be reckoned for its decline, and four for its increase above the ordinary level. In its whole breadth, which from Taganrog to Kertsch is computed to be three hundred and fifty versts, the sea of Azof is in no place deeper than from twenty-five to thirty fathoms. From the mouth of the Don to the distance of one hundred and fifty versts, there is every where good anchorage at a small depth, and in a soft miry bottom.

The environs of Taganrog, on account of the refreshing sea-winds, are situated in the most temperate and wholesome climate of Russia: the fountain and river waters of this city are generally good. In autumn, winter, and spring, tempests and thick fogs, which deposit much humidity, are common near the sea. Such fogs most generally and copiously occur in the bays formed by the Don, and do not spread farther than thirty versts into the country. In some winters the snow often covers the ground to a considerable depth; on the contrary, in others scarcely any of it falls. The floating ice is the principal cause
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of the freezing of the sea; but its bed is frequently broken by tempests. In the year 1791, at a period when the sea was frozen over, the ice was suddenly separated by a violent gale of wind, and driven with such impetuosity, that it not only damaged the harbour, but entirely demolished the marine hospital, which was built of wood, and situated close to the shore, though far above the highest level of the water: the unfortunate persons who inhabited this building in the night of that disastrous event, saved their lives with the greatest difficulty.

The sea of Azof near this place produces fish in considerable quantities, and even sturgeons of every description are taken here; but no other sea-fish. A small kind of blay, the *Cyprinus Ballerus*, which the natives call Singa, or Sinya, and a few of the *Cyprinus cultratus*, or Sablya, are caught in large draughts: the former of these are so numerous, that the fishermen often take from forty to seventy thousand in one net. During my residence in this place, the carriers of wheat bought them at the rate of two rubles the thousand: they were simply salted in layers, and thus transported to the interior of the country. In summer, when they cannot be conveniently salted for other markets, the proprietors of the store-houses are, according to an agreement subsisting between them and the fishermen, not obliged to purchase more than thirty thousand fish in one day, as a greater number cannot be properly cured within that space of time. It is therefore not uncommon, when too great a number is taken at one draught, that more than one half is returned to the sea.

On the barren steppe we met with scarcely any other game but large and small bustards, hares, and partridges. The appearance of the woodcocks, however, is very remarkable; as these birds, notwithstanding the general scarcity of wood, arrive here in numerous flights, during the winter, and search for their food around the stacks of corn, and on fallow lands.

Fig 12.





Journey from Taganrog to Taurida.

THERE is at present no direct post-road established between Taganrog and Taurida ; nor do the permanent villages, some of which are guarded by the Kozaks of the Don, extend farther than the rivulet Berda ; the remainder of the way leads over a steppe inhabited by the Nagais. Thus circumstanced, I thought proper to send a messenger to the Counsellor of State, M. HABLITZL, my particular friend, and at that time Deputy-governor of Taurida, with a request, to order the Nagais to procure horses, at certain stages on the road from Berda to Perekop, lest at so late a season I should have been under the necessity of taking the very circuitous route by Bakmut and

and Ekaterinoslav. While waiting for an answer at Taganrog, I enjoyed, with the companions of my journey, the most liberal hospitality, from the kindness of M. KASPAROF, Commandant of that place. As the weather was rough, and the state of my health precarious, I considered myself peculiarly fortunate to meet with a fire-place and other conveniences, which I could not expect to find on the advanced road.

Eighteen days had elapsed before the interpreter arrived, who was directed to accompany me on my journey through the country of the Nagais. At length, on the 21st of October, we left Taganrog, and proceeded first in a retrograde direction across the retrenchment and the small rivulet Tsherepakha; then turned to the Northward, over the ridges of stratified lime-stone, near the Mius, as far as Korovie-brod, or the cow ferry, where we passed that river, and thus arrived at the first stage, nineteen versts from Taganrog. The distance from the Sambek to this place, in a direct line, is computed to be twenty versts.

The valley, which is watered by the Mius, forms an extensive basin, with steep and craggy shores; a satisfactory proof of the former existence of a bay here, as well as at Miufkoi Liman. On the opposite side of the Mius, the stratified ridge of lime-stone becomes progressively higher; and, as we proceeded along the borders of this rising country, we were gratified with a view of the whole valley, in which we discovered the Slobode of Nikolaefsk, a place inhabited by colonists from Little Russia. We next descended to the brook Saramatskaya, which is formed by waters issuing from several low valleys, and empties itself into the Mius. Here we met with a common inn,

inn, ten versts distant from the last stage.—The calcareous strata now began to rise again; we observed several sepulchral hillocks erected of stone; and after travelling thirteen versts, we arrived towards night at our next stage, near the Nossova Balka; a ditch which contains but little water, and joins the Miuskoi Liman. Our road extended to the Westward, and we were informed that the sea-coast is fifty versts distant. The *Crambe orientalis* appeared here but rarely; it was of the same species as that we had formerly observed in an isolated state, on the steppe of the Dniepr.

On the 22d of October, early in the morning, we continued our journey over an elevated but level country, to the river Mokroi, or the Wet Yelantshuk. Strata of lime-stone appeared only in one of the glens; and the steppe presented innumerable small hillocks; but these were, on close examination, discovered to be the work of the marmots, as they had frequently deserted their habitations, to each of which we found their avenues. The Mokroi Yelantshuk flows through a declining valley, which in several places contains strata of lime-stone. This stage is twenty-two versts distant from the former; and the sea thirty-five versts to the Southward. We met with numerous flights of partridges; and swallows were here and there settling along the road, probably to feed on small bugs, or earth-worms.

The elevated plain became gradually more rugged, and thus continued even beyond the Sukhoi, or the Dry Yelantshuk. Our next stage was near the Gruskoi, or the Heavy Yelantshuk; a distance of thirty versts. As we did not find a sufficient supply of horses here, we pursued our journey without changing

changing them, till we came to Shirokaya Balka, or the broad glen, twenty-eight versts from the last-mentioned stage. From this place to the Kalmius the distance is computed at twenty-three versts: the road leads over an entirely level but elevated plain, on which we remarked a few sepulchral hillocks erected of stone. On one of these sacred mounds we saw two great vultures, *Vultures Perenopteri*, birds of prey, which are very numerous in Taurida; but we could not approach them within gun-shot. The very steep and lofty bank of the Kalmius is chiefly composed of rock. Towards night we crossed that river, which is seventy fathoms broad, in a flat boat; the ferry is five versts distant from the sea-shore. When the wind blows from the sea, the water frequently rises more than three feet and a half, English measure, above its usual current. From this ferry we proceeded along a valley, at the foot of eminences composed of calcareous strata, to the Greek town of Mariupol, twenty-eight versts distant from the last stage. On our way we crossed the little rivulet Kaletz, which empties itself into the Kalmius.

Mariupol, or as it is denominated in the Ukase of the establishment, Marianopol, was built at the same time with Nakhtshivan, by Greek emigrants from the mountains of Taurida. Merchants and mechanics principally settled in the town; but the adjacent district was granted to husbandmen, by whom it is now inhabited; their territory is remarkably fertile, but entirely destitute of wood. Towards the East of the Kalmius it borders on the country inhabited by the Kozaks of the Don; and to the West, on the small river Berda. The town consists of two churches and three hundred and five dwelling-

dwelling-houses, chiefly built of freestone; it also has a good market-place, furnished with wooden booths. The houses are constructed in the Grecian style, with projecting roofs ornamented with scrolls, or brackets, and covered with hollow tiles: both churches are decorated only with wooden turrets. Few of the inhabitants have begun to form gardens; perhaps because they still entertain hopes of being removed to Taurida. Among these new colonists are artisans and mechanics of almost every description; and we met here also with tanners as well as manufacturers of Morocco leather. Their industry and police, however, did not, in general, appear to us equal to the regulations prevailing among the Armenians. According to a late computation, the number of the inhabitants of Mariupol consists of eight hundred and ninety-one males, and eight hundred and eighty-four females.

The new colonial villages are mostly situated on the banks of the Kalmius, and its constituent rivulets: several of these places have also been established near the sea-coast; and almost every one of them has been called by the old name of the settlements formerly inhabited in Taurida. I have here subjoined a correct list of their names, as well as of their respective population.

	Houses.	Men.	Women.
Yalta, near the sea-coast - -	155	360	350
Urfuf, ditto - - -	50	122	100
Mangush, on the banks of the Byelo-			
saraika - - -	163	391	350
Staroi-Krym, near the rivulet Kaletz -	71	177	153
Maloi Yenifala, ditto - -	191	496	425
			Ther-

	Houfes.	Men.	Women.
Tfherdakly, near a small rivulet falling also into the Kaletz	85	238	237
On the banks of the Kalmius. { Sartana	140	416	373
{ Tfhermalyk	94	277	240
{ Karana	135	410	320
{ Ignatzievka	130	295	281
{ Lafpi	74	130	140
{ Karakuba	254	685	633
{ Befhew	115	280	236
Stila, near the rivulet Volnovafha	112	283	242
Constantinople	110	266	236
Ulakle	77	177	176
Bogatyr	130	329	304
Kamara	96	333	279
Bolshoi Yenifala	142	360	227
Kermentshik	163	431	345

The whole amounts to two thousand four hundred and eighty-seven houfes, inhabited by fix thousand four hundred and fifty-fix males, and five thousand fix hundred and fifty-two females. — I fhall only add, that the laft fpecified villages are fituated near the rivulets which empty themfelves into the river Konfkye vody.

Mariupol is built in a fituation equally advantageous and extenfive, on the declivity of the high fteppe, which, towards the valley, forms the right or western bank of the Kalmius. This river flows in a north-eaftern direction, with many windings, towards the Black Sea, of which we had a diftinct view,

view. The high country, formed by the calcareous strata, gradually declines from the mouth of the river, and opens into an extensive dale, the soil of which is covered with verdure, and appears to be scarcely more than a fathom above the level of the sea. Tumbasses, or barges, carrying from one thousand to fifteen hundred pood Russian weight, may enter the mouth of the Kalmius: and about five of these vessels belong to the ship-owners of Mariupol, who likewise possess forty fishing boats. Belugas, or sturgeons, and a number of Sevrugas, generally of a large size, are taken in the sea; and a quantity of isinglass, as well as smoked fish cut in slices, called Balyki, are prepared by the fishermen of this place. The inhabitants are destitute of almost every species of fuel, except large stalks of plants, or Burian, brought to market in waggons, and generally consisting of the *Artemisia vulgaris*, *Melilotus*, *Verbascum Thapsus* and *nigrum*, and *Centaurea Scabiosa*.

The high bank of the valley is composed of an horizontal stratum of lime-stone covered with earth and verdure towards its declining basis, but exposed at its top, especially on its elevated surface, the height of which is from three fathoms to three and an half above the valley. On a more minute survey of this stratification, I found it consisted partly of hard layers of a whitish grey colour, from nine inches to upwards of two feet thick, and breaking in large plates, interspersed throughout with pectinites, tellinites, and oolites, and partly also of thinner and much softer layers. Beyond the town, and on the upper edge of this calcareous stratum, above which the verdant steppe imperceptibly rises three or four fathoms higher, we clearly perceived the ancient separation or inter-

ruption of these beds, which were apparently corroded by the washing of the waves, especially in those places where the Greeks had worked no quarries of freestone. The alluvial destruction of shells was evident in a great number of holes and caverns. In some of the former, which penetrate the stratum of stone almost horizontally to the depth of two or three feet, I met with a coarse quartz sand, mixed with shells in a tolerable state of preservation, and resembling those which are to this day found, not only in the Caspian Sea, but likewise on the adjacent steppe; an indisputable proof that the sea in former ages was confined by this bank, and had nearly four fathoms of water. A farther corroboration of this conjecture, are the loose alluvial strata, formed immediately above the ancient and firm horizontal bed of lime-stone. We generally found here, a layer of a pappy calcareous matter, sometimes upwards of eighteen inches thick, deposited by the sea, and mixed with a coarse white quartz sand, apparently produced by the attrition of lime-stones and shells. Above this, we frequently observed an irregular bed of a very pure white, and occasionally a coarse yellow quartz sand; next to the interrupted layers thereagain appeared a stratum of white calcareous earth, often eighteen inches in thickness, and more or less mixed with a coarse, edged, white, and transparent quartz sand, which at length was succeeded by an upper stratum of clay and loam, with black mould and verdure on its surface. Below the upper layers of the horizontal stratification, I observed in one place a thin bed of friable shell-lime in a decomposed state, containing a few fragments of crystallized shells of various kinds filled with quartz: the laminated substance of these

these shells was corroded in a manner similar to those found in the environs of Bologna, as well as in Piedmont, and frequently preserved in the cabinets of natural curiosities. On the marginal surface of the upper stratum before mentioned, there is a white calcareous earth, mixed with a sharp quartz sand, which the Greeks established in this place use with advantage, in constructing the walls of their houses; because it serves as an excellent mortar. Another bed of similar marly lime has been discovered in the low country, near the town, where it lies exposed on the surface.

Below the whole calcareous stratum, wells from three and a half to five feet deep have been dug in several places on the border of the valley, near the town: these artificial springs afford a very pure water, and are preserved by a fence of rough stones. On the western isthmus, near the mouth of the Kalmius, there issues from the calcareous beds a natural spring of cold and sweet water, which has also been partly inclosed, and divided so as to serve different purposes.

A number of large anchors for constructing a floating bridge over the Kalmius were lying on its bank, as it was expected in the year 1784, that the Empress, on her return from the Crimea, might probably pass through Taganrog. With this view, the whole road extending to the rivulet Berda was levelled, and small heaps of earth were placed at some distance from each other, on both sides of the road, for a purpose I did not learn*.

We

* I have been credibly informed by a Russian gentleman, then in the suite of the Empress, that Prince Potemkin, the Tauridan, had cunningly ordered the peasantry of the different districts, through which the Sovereign passed on her

We did not leave Mariupol till the twenty-third at noon. The high steppe, over which we again travelled on leaving the sea-shore, is intersected by gently declining dells, the next of which extend towards the Kalmius, while those more remote take their direction to the sea. The road led in a direct line to the Greek village Mangush, which is built on the bank of the small rivulet Byelosaraika, flowing into the sea, twenty-eight versts distant from our last stage. It is situated on a gentle elevation; the streets are broad and regular, being embellished with neat houses, many of which are covered with indented tiles. Its environs are very fertile, and the sea is about ten versts distant from this place. The church is constructed of rough stones, consisting chiefly of granite and gneiss of different kinds, which are brought hither from the banks of the Berda.— On a future occasion I shall take notice of the dress of the female Greek peasantry, when describing the costume of those who inhabit the Crimea. Most women here were dressed in blue linen, and wore white handkerchiefs round the head.

Scarcely any other but wild horses, not trained to harness, were furnished for us at Mangush; and the peasants, revelling

journey to Kherfon, to travel with carts and waggons loaded with flour, in order to convince Her Imperial Majesty of their flourishing situation. But as there happened to be a great scarcity of corn in those provinces, the soil of which had been deluged with human blood, without increasing its vegetation and fertility, the distressed peasants were obliged to convey sacks filled with sand or earth, and dusted over with calcareous marl, a plentiful production of that country; while others, with starving horses and haggard faces, drove their empty waggons, to persuade the Northern Semiramis, that they were returning either from the mill or the market, where they had received the rewards due to their labour. — *Transl.*

with

with their priests, were intoxicated with new wine, which had just arrived from the Crimea. Both these circumstances occasioned considerable delay; and, at length, after the horses were put to our carriages, one set of them ran away with one of the baggage waggon, and galloped down the heights into the plain with such fury, that they overturned it into a ditch. Fortunately no person received any injury, and the damage done to the waggon was soon repaired. We lost, however, much time by this accident, so that we could not pursue our journey till twilight. There was only one small glen, which we were obliged to cross, and afterwards travelled over an almost uniform steppe, illuminated by the conflagration of several tracts of this desert; thus we arrived at the small river Berda, which is thirty-six versts distant from Mangush. Here we met with a commodious felt-tent prepared for our reception, as well as with the first relay of Nagay horses which were kept in waiting; but, on account of the darkness of the night, and the steep banks which lay before us, we thought it prudent to fix our quarters on this solitary spot.

As we approached the Berda, we observed that the soil was considerably mixed with a pulverulent granite. Towards the South of our road was situated Petrofskaya Krepost, on the extremity of the Lines of the Dniepr, near the mouth of the Berda; and to the North, Sakhariefskaya. The sea-coast is said to be about twenty-two versts, and Ponavina Khuter, near the Berda, ten versts distant from our last place of repose.

The small river Berda is, in the Tartar dialect, called Kayalyk; a name which may have been easily changed by the Russians into Kayalka, or Kalka: hence it may be reasonably conjectured

conjectured that this was the rivulet Kalka, hitherto undiscovered, and near which, according to the account given by the Russian historians, the united Princes and Polovtzes were first defeated by the Tartars. Other writers, though with less probability, suppose this to be the rivulet Kaletz, which empties itself into the Kalmius, beyond Mariupol. The breadth of the Berda in no place exceeds three fathoms, and, in general, is only twenty-eight inches deep; its crystalline current is rapid, though it does not immediately communicate with the sea; running in a direction from North to South, in a very deep channel cut through rocks; and, watering scarcely any vallies in its passage, it purls over a bed of white quartz sand, consisting entirely of decomposed granite, similar to that which is found mixed with calcareous earth, near Mariupol. The left bank generally declines in an imperceptible degree, and is not nearly so rocky as the opposite bank, which occasionally exhibits rocks of granite, as if the channel of the river had here been intersected by a bed of that fossil. This rivulet contains numbers of exquisite fish, even towards its source; and where its course is interrupted, so that it forms a kind of ditch on the steppe, it also affords food to numerous lobsters. I found here the *Mya pictorum*, the small Caspian muscle, and the beautiful *Nerita littoralis*.

The rocks projecting on the right bank present granite and gneiss, in such uncommon proportions as to deserve a particular description. — Different kinds of solid layers of granite compose the first rocks, which alternate with similar strata of the schistus kind, and among which a massy bed of red granite was peculiarly remarkable, as it is split by the influence of the atmosphere

atmosphere into large and small parallelopipedons, which appear partly decomposed into gravel. All the beds are bent downwards, at an angle of forty-five degrees, in a south-western direction. At a short distance from the place where we crossed this rivulet, on its upper part, we observed that assemblage of rocks which I have caused to be represented in the thirteenth Vignette. The current has considerably undermined it in two places. We took particular notice of a soft and lamellated granite, which cannot properly be called gneiss: it was disposed in beds of different degrees of thickness, running in a wave-like form, but interrupted towards the South-west, and in several parts intersected and displaced by transverse clefts, as represented in the Vignette, under the letters *a b c d e f*. Interspersed among these beds, we observed three parallel layers of coarse-grained, red granite, *g h i*; the nature and composition of which are obvious, as they cannot be distinguished from the granites of original mountains. The layers last mentioned are displaced by similar clefts; and in the uppermost, marked *g*, it is remarkable that the same granite deviates from its usual situation, by rising and descending not unlike a wedge, in the cleft *a b*, as if it had been produced at a later period than the granite schistus of this cleft, or as if it were placed there to fill up the cavity. Nevertheless it bears a perfect resemblance to primitive granite, and is likewise crystallized with similar compactness. Nor are the layers of this lamellated granite of an uniform quality. Some are considerably mingled with a black mica, and appear like a micaceous schistus. The strata, however, are of various degrees of thickness, sometimes not exceeding the eighth part of an inch, though in all the well-mixed constituents

stituents of a grey granite are perfectly evident: and as its layers are situated between solid granite, and in a similar direction, it cannot be considered as a fossil of a secondary formation.

A short distance up the rivulet, we observed the rock represented in the fourteenth Vignette. Its northern part, *a*, is a grey, solid granite; on the contrary, the southern part, *b*, is a similar red fossil of equal compactness: a parallel bed of schistous granite, *c c*, richly micaceous, separates them from each other, and there can be no doubt, that this bed is of an origin coëval with the granites.

In this singular mountain, or rather field of granite, we discovered, near the fortrefs of Petrofskaya, and the Ponavina Khuter, a white micaceous schistus, which was formerly supposed to be a silver ore. There was likewise another fossil composed of glimmer, quartz, and granates, breaking in beautiful plates, but the stratification of which I could not inspect. We also met with granites in the micaceous schistus.

Beyond the Berda, the mountains of granite continue tolerably uniform, and do not much project above the calcareous strata; yet in several places they imperceptibly rise. We frequently observed small hillocks of earth, piled up by the earless marmot; but we could not discover the least vestige of woods or forests, said to have formerly covered this country*. With the exception of two small knolls of granite, the whole was covered with turf, beneath which this fossil was often

* According to an account given by RUBRUQUIS, in his fourteenth chapter, the desert inhabited by the Kumanians, to the East of Perekop, and which was partly covered with grass and partly with rocks, at that time abounded in wood.

found at a small depth, so that in various situations it could be distinctly seen on the surface.

After travelling about ten versts from the banks of the Berda, we arrived at a dry glen, which takes its direction towards the sea, and where we remarked grey and red layers of solid granite: these were broken towards the South-west. Grey strata of this fossil, generally consisting of pure feld-spath and quartz, and with a similar declination, appeared in several glens extending to the Keltetsh; a rivulet formed by two springs, both running in singular meanders over beds of granite sand; one of which, in several places, contained deep water. Beyond the rivulet, which runs through an extensive concave valley, the mass of granite rises to its former height, about seven or eight fathoms above the level of the adjacent rivulets; this fossil is uniformly covered with a vegetable mould, productive of various plants, though it occasionally exhibits small rocky protuberances above the surface of the plain. Thus we advanced towards the rivulet Yelanatsh, by the Russians called Butotshna, which, after its union with the Keltetsh, empties itself into the sea: the distance from our last stage was computed at forty versts. The Yelanatsh forms deep marshes, in a bed of granite sand, and produces the small, variegated nerite before mentioned, as well as numbers of the *Monoculus conchaceus*. To the left of our road and the rivulet, we observed upon an eminence a sepulchral hillock, erected of various fragments of rocks collected in its vicinity, and on the top of which was placed a statue of rough workmanship, with its face towards the East. This monument appears to be formed of hard granite, a fossil composed of quartz sand and granite, interspersed

interspersed with particles of black mica, in the form of schorl.

Immediately beyond the Yelanatsh, we perceived rocks of granite, in beds of different kinds and degrees of thickness, but all of them lay in a vertical position, and extended in a parallel line from N. W. to S. E. On a small tract about twenty or twenty-five fathoms broad, we found, in entire beds, a collection of the following fossils :

1. A coarse-grained granite, chiefly consisting of quartz, with a few whitish spots of feld-spath, and some plates of a thin, brown glimmer, interspersed through the mineral.
2. A coarse reddish granite.
3. A grey granite, with small particles of black mica.
4. A coarser species of granite, with stellated particles of glimmer.
5. Another grey semi-granite, interspersed with gold-coloured, spiral glimmer, and coarse grains of quartz.
6. Compact veins, composed of feld-spath and quartz, as well as thin layers, with a small proportion of glimmer, scarcely discernible.
7. Lastly, all these beds of granite were again intersected by parallel strata of a coarse gneiss-schistus, mixed with quartz, and abounding in mica. — Here, as well as in the whole mass of granite, which forms the high plain from the Berda to the opposite side of the rivulet Karfak, there is nothing, in my opinion, more remarkable than the exposed situation of this granite, which, though of an inconsiderable height, has

no incumbent strata of other minerals ; nay, we could not discover on its surface any vestiges of the adjacent shell-lime, which is of an almost similar elevation ; and yet there is no doubt that both those fossils have, in former ages, been covered by the sea.

On leaving the Yelanatsh, the bed of granite continues of an uniform height, except where it forms two isolated knolls ; while the verdant plain appears, though less frequently than before, covered with small heaps of earth thrown up by the Kasan marmot, and other subterraneous animals. About twenty versts from the Yelanatsh, we crossed the fetid and muddy rivulet Kamyshala, the banks of which are of a saline nature, and do not exhibit any traces of granite. Here, and especially along the road, we met with the *Salsola Kali*, a plant which we had not observed since our departure from the environs of the Kuma. — Beyond the Kamyshala, the elevated plain again presents rocky knolls, several of which, to the right of our road, were covered with various fragments of granite, apparently collected for the purpose. Towards the close of the day, we passed, on our right, a chain of hillocks, being the first of any considerable size on this extensive mass of granite ; I therefore determined to visit them on the following morning. At length we arrived at our night-quarters, near the rivulet Karfak, thirty versts distant from the last stage ; we were guided by the fire of a steppe, which afforded a most brilliant illumination, but the light of which, as we passed along the rocky side of the ridge, gradually disappeared.

On the 25th of October, we travelled along the bank of the rivulet; and here, as well as on the eminence, we observed but few exposed rocks of granite, though this species of mineral lay so immediately below the surface, that its gravel was every where thrown up by the earless marmot. The granite was here of a remarkable composition, being extremely hard, split in thick layers, and mixed with feld-spath of a dark-red colour; but each stratum again, by the partial separation of the glimmer from the feld-spath, presented peculiar streaks, winding in different directions, and resembling a piece of veined wood. Here the rivulet forms several standing pools, which abound in lobsters, and communicate with each other only in the rainy seasons.

To the North of our road, and in a direction from S. S. E. to N. N. W. there is a chain of small hillocks known by the name of Karfak, about two versts in length: I visited this place, though I was obliged to return five versts from our last night's quarters. The perpendicular elevation of the mountainous ridge above the level of the mass of granite, does not appear to exceed eight fathoms. It consists of three gentle hillocks, ridged together; at the north-western extremity of which there is another hillock terminating in a point: but that to the South-east is the highest and most extensive, inasmuch as it has, over nearly the whole length of its top, a brow of pointed rocks, while the North-western hillock presents none, and that situated between the two last-mentioned exhibits only a few such projections. The whole of this assemblage of rocks appears to be an immense mass of quartz, which, though from the superficial inspection,

inspection, and for want of assistance, at the present advanced season, I could not sufficiently examine, yet I am inclined to believe it contains metals. The species of this fossil appeared to be a bastard sort of granite, of different degrees of thickness in its extent, which, in a longitudinal direction, amounts to four hundred fathoms, and about thirty or forty in breadth; so that it terminates with the declivity of the hillocks, where the nature of the mineral seems to have undergone still greater changes, by the effects of the atmosphere. On the south-eastern hillock, the elevated brow, as well as the projecting rocks of the intermediate hill, are composed of a reddish ferruginous mixture of quartz, interspersed in various ways and forms with crystals of wolfram, which sometimes are in a manner wedged in, and sometimes but superficially scattered: the composition of this fossil, however, considerably varies in a transverse direction, and at length terminates towards the south-eastern declivity, in a simple crypto-metalline quartz. The different clefts of this mineral vein, by which it is divided into parallelograms, almost uniformly intersect each other in three oblique lines. First, those which are parallel to the progressive stratification, decline almost perpendicularly towards the South-west, or at an angle of 70° . Next are the transverse layers, which take a direction from N. E. to S. W. and decline towards the N. W., with a similar or somewhat less acute angle. Lastly, those clefts which superficially intersect the two other chasms thus interrupted, extend almost in the same direction with this mineral vein, from S. W. by S. towards N. E. by E.; and bend downward to S. E. by S., at an angle of 20° , or still more horizontally. Towards the southern extremity, the

9

direction

direction of the transverse clefts is rather from S. S. E. to N. N. W., and from W. S. W. to N. N. E.; while the more shallow intersections, which approach nearer the horizontal situation, deviate scarcely ten degrees, and incline from E. S. E. to E. by S. Thus the rocks are in a manner graduated by particular divisions. Towards the south-eastern extremity, in several places where this mineral is of a quartzous nature, and especially in the clefts of ochre, we observed thin scales of a gold-coloured glimmer; and the ochre itself appeared to be interspersed with particles of gold-dust. A single day's superficial labour would be sufficient to ascertain the nature of this metallic vein.—The crystals of wolfram, though in some divisions of the ferruginous quartz not uniformly parallel, nevertheless take a direction in a certain degree corresponding to the course of the clefts, as well as the veins of ochre; they are of a steel colour, of a prismatic form, and transversely laminated, similar to an iron or lead glimmer, with obliquely terminating points. In some places, the iron-black quartz of this vein was not unlike emery; in others we met with small isolated masses of a ferruginous ochre between the clefts; and perhaps, at some depth, pyrites might also be discovered.

At a distance of about two versts, to the West of this hilly ridge, in the plain country, we observed a small sepulchral eminence, formed of stones collected in the vicinity, and on which were erected three oblong monuments of granite: the intermediate of these rude columns consisted of spiral layers; and, having in some degree acquired a round form, by the decomposing action of the air, it appeared like an half-finished statue, the prominent face of which was turned towards the East.

East. The two other tomb-stones were placed at each side, in a reclining posture, and plainly evinced their angular and irregular fracture from the quarry.

After this mineralogical investigation, I hastened to rejoin my travelling companions, who, during my excursion, had advanced on their journey.—Beyond the rivulet Karfak, there rises a ridge of the red-veined granite before mentioned; its elevation is nearly similar to the former bed of that fossil; it extends between the Karfak and a more western low ground which accompanies this rivulet, and at length terminates in an elevated angle, towards the North-west. On the border of the valley, several tracts of rocks appear on the rising surface; and on the plain the earless marmots have here and there burrowed the soil, and thrown up the red granite, reduced to gravel. From the low ground before alluded to, the country imperceptibly declines; and, a few small vallies excepted, the plain becomes uniformly level, and exhibits neither traces of granite nor any other kind of fossil. Below the turf, we occasionally took notice of sand, or a coarse gravel, and the plants growing there almost generally corresponded to those formerly found on the steppe of Samara. Here the following plants were in blossom during the months of May and June; namely, the *Onosma echioides* and *simplicissima*, *Salvia nemorosa* and *nuttans*, *Phlomis tuberosa* and *Herba venti*, *Dracocephalum thymiflorum* and *sibiricum*, *Nepeta violacea*, *Hedysarum Onobrychis*, *Astragalus pilosus*, *grandiflorus*, *contortuplicatus*, *Centaurea moschata* and *sibirica*, *Carduus cyanoides*, *Inula hirta* and *odorata*.

rata. Of these plants, none is more celebrated, and collected with greater avidity by the females of this country, than the *Onosma echiioides*; its root is long, and appears as if it were tinged with a beautiful crimson colour; hence the young women steep it in oil, and in that state use it for painting their faces; a common practice in Russia; and from this circumstance it is called by the natives Rumanitza; but by the Tartars Krsnah.—Along our present road we also met, in uncommon abundance, the last described plant, as well as the Kali, the *Artemisia maritima*, and *Austriaca*, *Bromus mollis*, and *Verbascum Thapsoides*.

After advancing about fifteen versts, we crossed the rivulet Apanly, which forms tolerably large basins, and is in several places of considerable depth; fifteen versts farther we arrived at the Gorkaya, or Atshla, signifying the bitter rivulet; and ten versts thence, at the Gorkoi Kelembet; both these having at present dry beds, the channels of which were gently excavated, and not nearly so deep as those of the preceding rivulets. At length, after proceeding ten versts from the Gorkoi Kelembet, and having travelled at least fifty versts from the Karfak, where I parted with my faithful companions, I again met with them in the twilight of a beautiful evening, on the banks of the rivulet Moloshnya Vody: preparations had been made here for our night-quarters.—This day we saw large flights of swans, very low from the ground, on their passage towards the North-west, and likewise observed numbers of small bustards in search of their food on the steppe.

The place where we spent the night, and crossed the rivulet Moloshnya Vody, or Milk-water, is called Ovetshie brod, or the

the Sheep-ford ; it lies about one verst from the commencement of the Liman, a marsh formed by the rivulet, before it enters into the sea ; from which it is about thirty versts distant. On account of the excellent pasturage which the extensive banks of this rivulet afford, the Tartars call it Sütt, or the Milk-brook ; a name likewise adopted by the Russians : it flows through a large valley of a sandy soil, rather of a saline nature ; and it is obvious from its natural, though inconsiderable banks, that in the winter and spring seasons it contains a greater body of water. In this neighbourhood it runs between narrow banks, and its water is fresh and potable ; but after advancing twenty-five versts farther, the high land again approached its environs, and the black soil re-appeared. On both sides of the Liman, there are many saline tracts, and the water itself is saltish and turbid. This marsh, together with the adjacent low country, seems to have originally been a maritime bay, which, like the inlets of the rivulets we crossed since our departure from Mariupol, as well as the Berda itself, have no other communication with the sea than that occasioned by the high spring-tides. Ten versts from Ovetshie brod, we passed the rivulet Tashanak, which empties itself into the Liman, and the high country thence extends to the Southeast, where it forms a kind of isthmus : here the soil of these eminences again presented a blackish stratum, but with a considerable intermixture of sand.

Between the rivulets Berda and Moloshna, we met with wandering Nagays ; a very small remainder of that numerous horde which was lately distinguished by the name of Kubanian Tartars : they have only within the last two years been trans-

ferred from their former habitations in the vicinity of the Kuban, to these beautiful pasture-grounds, where they enjoy tranquillity and abundance; for, while dwelling between the turbulent Circassians and Kalmuks, they were involved in continual warfare. At present the steppe of this country is too extensive for their flocks, which, however, it is to be hoped, will progressively increase together with their population. The Privy Counsellor VON SHEGULIN, late governor of Taurida, has rendered an essential service to the state, by distributing seed-corn, and encouraging those Nagays who were hitherto unfettered, to devote themselves to agriculture; a measure which has been attended with so much success that they have become industrious husbandmen, and are enabled to furnish the port of Koslof, or Eupatoria, with the principal quantity of that excellent summer-wheat called Arnautka, which is thence exported. Nay, there is every prospect of colonizing and permanently settling them in villages built for their accommodation during the winter season. These Nagays possess no camels, their oxen and cows are generally small, like those of the Circassians, and the Tartars who inhabit the mountainous parts of Taurida; but when harnessed to the two-wheeled carts, or Araba, in which they transport their moveable huts and domestic furniture, their cattle run equally light and swift. Although their horses are in general small, and of an indifferent breed, having hoglike necks, and a projecting head, yet they are strong, tractable, and hardy. Nor are their sheep superior to the ordinary kind bred in Taurida, with long tails, which at the upper end are longitudinally covered with pieces of fat, but are round and thin towards the lower extremity. In summer, these people, with their flocks, travel north-

ward along the banks of the rivulets, where they sow wheat and millet in remote places, and neglect all farther cultivation till the time of harvest. At the return of winter, they again approach the sea of Azof, near which they find grass preserved for forage, and, perhaps, a remaining supply of that hay which they had formerly made in the vallies. — No other tribe than that of Yedissan, whose chief, *BAYASID BEY*, is likewise appointed by government to the command of the two others, is permitted to wander along the banks of the rivulet *Moloshna*. The pastures of the *Ulus Dshamboiluk* lie near the rivulet *Karfak*, and those of the *Ulus Yetishkul*, are on the banks of the *Berda*. Exclusive of the *Nagays* who remain at the *Kuban*, the three tribes consist of about five thousand men; that of *Yedissan*, comprising three thousand four hundred and twenty-five; *Yetishkul*, five hundred and thirty-three; and *Dshamboiluk*, one thousand one hundred and three persons. They belong to *Melitopolsk*, a district subject to the *Tauridan* government, but the capital of which is not yet established. They have no princes, nor any other titles of distinction, than those of their *Murshes*, or *Nobles*, of whom the two families of *Suban-kafi*, and *Edei-oglu*, have assumed the title of *Bey*, and are held in the greatest estimation.

The *Nagays*, as well as their kinsmen near the *Lines of Caucasus*, and the *Akhtouba*, live in small huts constructed of felt, the largest of which are from about four to five and a half arshines in diameter, and, like those of the *Kundure Tartars*, cannot be taken to pieces, but are placed by two men upon a carriage, and thus removed from one place to another *. — The

* According to *POMPONIUS MELA*, and other ancient geographers, the *Agathyrses* and *Sauromates*, who by the *Greeks* were called *Hamoxobites*, or people

huts of the Nagays are distinguished from those of other tribes by a vent-hole for conducting the smoke, and a cover applied to it with a handle from which a line is suspended for the purpose of opening and closing the aperture, and securing the hut from the inclemency of the weather. Mats of reeds, and wooden work much withered and smoked, like that of their Arbes, are employed to line the walls of the huts: for, as these tribes are destitute of timber *, they are obliged to purchase it in Taurida, at a considerable price.

The dress of the men consists of sheep-skins, and a coarse kind of cloth; their caps are of different shapes, but those most generally worn are small and round, so as to cover the head only as far as the ears, and are manufactured of lamb-skins. Such caps are made of cuneated pieces, like the caps of children in Germany, and are either plain, or adorned with fur. In order to give a specimen of the dress of their women, I caused a drawing to be made of that of a young lady, the daughter of BAYASID BEY, before mentioned. An engraving of this drawing, being an exact resemblance, is given in plate 24, where she is represented in company with her mother, and a female slave. Her features resemble those of her father, and are peculiar to the Mongole tribe, as is remarkable in most of the

living on carts, inhabited the borders of the Mæotic pool, or Sea of Azof. Hence it appears, that similar manners and customs then prevailed in this neighbourhood, which was perhaps peopled by the same race.

* The poles of their huts are generally made of hazle, and are sold at a high price by the Mountain-Tartars of Taurida, at Kosloff. They are brought hither by the Nagays, who furnish this market with wheat.

Nagays,



Neglect, though that makes it at a moment when the
nearly worn Constitution; and amidst women who are
of the same age as the children of that name. The
of the late and very remarkable for beauty. The
in the midst of all these objects, a kind of strange
which with the objects, consists of body, mind, and
completely represented a lot of years, and a lot of
on the celebration of the festival, devoted to the subject of
the bride. Then took place the ancient Tatarian
the principal of the house, and the bride, and the
things, however, entirely determined by the laws of the
Customs.—The language of the Tatars is said to vary in many
respects from that spoken in Russia, which is a Turkish dis-
lect. These people possess more activity and resource, but they
are otherwise an inferior race, and are regarded as the
objects of Russian contempt. The Tatars are very
fond of their horses, and are very expert in the
management of them.

From Nicholas's Vody, or more properly speaking from the
above mentioned station, a service for country gentlemen
and nobles, and a regular postal office, which is a great
convenience for the country, and which is a great
a few curious specimens collected at the Vody station.
and birds, and a number of the Tatarian culture. The
which are very common, called Osh, or Osh, which have
deep, though shallow, and are not at all deep.
from the Vody. The birds and plants of the Tatarian
particularity in the station, which is distinguished by a
particularity in the station, which is distinguished by a

Nagays, though her mother is of a different race. — Girls generally wear Circassian caps; and married women have adopted the veil, according to the custom of that nation. The females of this cast are not very remarkable for modesty. Conformably to the usage of all Asiatic nations, a Kalim or marriage portion, which, with the opulent, consists of forty mares, two horses completely caparisoned, a suit of armour, a gun, and a sabre is, on the celebration of the nuptials, delivered to the father of the bride. Their food, like that of the ancient Mongoles, consists principally of horse-flesh and mares' milk;—this mode of living is, however, entirely relinquished by the Tartars of the Crimea. — The language of the Nagays is said to vary in many respects from that spoken in Taurida, which is a Turkish dialect. These people possess more activity and vivacity, but they are likewise more rapacious and ungovernable than the inhabitants of Taurida, and retain the primitive customs of their forefathers, as well as a predilection for a wandering life.

From Moloshnya Vody, or more properly speaking from the above mentioned Tashanak, where the low country terminates with a remarkably large sepulchral hillock, another high and very level steppe commences, upon which we again observed a few curious monuments, constructed of flat, very light and porous bricks, and undoubtedly of Tartarean origin. We crossed two rivulets, called Oetluk, or Utluk, which have deep, though shallow water, and unite at a distance of forty versts from the sea-coast. The beds and shores of these rivulets, particularly of the latter, which is denominated Klukva, and is fordable

fordable twenty versts from Ovetshie brod, are slightly impregnated with salt; and the wells dug in the blue clayey soil yield a green brackish water: the western banks of both rivulets are steep and high; the eastern banks, on the contrary, gradually decline. Near the latter we observed workmen employed in erecting a Russian farm-house of unburnt bricks, according to the custom of this country;—a very advantageous method of building in provinces destitute of wood. In a similar manner, the Kirghis, a Tartarian tribe, who inhabit the country beyond Perekop, construct their houses in permanent villages, and apply themselves to agriculture and manufactures. Of such villages are about thirteen in number; and at the time we passed through them, each contained about forty habitations.

From the second Oetluk, our road which had hitherto extended westward, now turned to the South-west, towards Perekop. There is, however, another public road at that rivulet, which runs southward to Tonkoi Prolif, (narrow strait,) or, as the Russians call it, Yenitzshee, where there is a ferry leading to the isthmus of Arabat. Waggon laden with provisions and other articles of commerce, to and from the eastern parts of the Crimea, are ferried over at this place, as is also the salt obtained from the brackish water of the small lakes situated on the neck of land before mentioned.

At one o'clock we left Oetluk, and though travelling at a smart trot, it was six o'clock in the evening before we reached the wells of the country of Tshernye Kopani, or, in the Tartar dialect, called Kara-Kuyu; so that the distance must have been more than forty-five versts. The level, barren, and generally sandy steppe, over which we travelled during the last twenty versts,

versts, gradually declines towards the south. In the following night there was the first fall of rain we had experienced since our departure from Taganrog.

On the 27th of October we had a view of the extensive valley called Kara-Kuyu; it is of a black soil similar to many others on this steppe, which extends to the banks of the Dnieper. A serpentine, saline marsh reaches so far as the Sivash, or, as it is called, Putrid Sea. We here found the *Glycyrrhiza echinata*, a plant not to be seen in Taurida, *Salsola soda*, *Polycnemum dichotomum* and *Ferula orientalis*, intermixed with other saline vegetables. — The whole of this soil, like that on the low grounds of this steppe, has, on its surface, a very black and rich mould, probably produced in consequence of its having once been a sedgey marsh of luxuriant vegetation, which, by the subsequent process of putrefaction, has been gradually changed into this excellent manure. The heights of the steppe, which are rendered still more picturesque by the view of sepulchral, or signal hills *, consist of a reddish clay. We travelled upwards of twenty versts on the low grounds of Kara-Kuyu, till we arrived at a considerable height, from which we enjoyed a prospect of the north-western gulph of the Sivash, and its tolerably steep shores. After a journey of thirty-six versts, we reached the village of Kuyenly, which is situated on an argillaceous soil, near several wells, and extends to the above mentioned gulph. The inhabitants of this village are Kirghis Tartars, who besides

* There is no doubt that in ancient times, particularly in the Crimea, and the steppe of the Dnieper, many hillocks were raised as watch places, or land marks.

their

their agricultural pursuits, carry on a brisk trade in grain, cattle, and other articles, with the Nagays. Their domestic economy is similar to that of the inhabitants of the Tauridan steppes; they generally dwell separately, upon scattered farms; and the habitations, stables, store-houses, hay and corn-stacks, as well as piles of fire-wood belonging to one family, are so arranged as to form the premises into a regular square. Most of the houses consist of a hall, with a hearth for culinary purposes: the passages for emitting the smoke, as well as the chimney, are made of wicker-work, coated with clay. An apartment is furnished with a small stove of a cubic form, and a low sofa covered with cushions and carpets, or felt. Another room provided with similar articles, is appropriated to the use of the women, and the small window frames are throughout covered with expanded bladders, instead of glass. The fuel, which they call Tifak, is a composition of cow-dung, and the excrements of other animals, collected in autumn, mixed with plants and straw, and formed into pieces not unlike bricks. These pieces are placed in heaps or thick hollow walls of a rectangular form, the inside of which is filled with dry dung. In order to exclude the rain, the outside of these heaps is plastered over with fresh cow-dung, and covered at the top with dry stalks of plants, particularly those of a curious *Centaurea*, which is called Kurai*, and grows

* This species of *Centaurea*, which appears to be unknown to Botanists, is very common as well in Taurida, as on the whole of the steppe of the Dnieper. Notwithstanding its dry, hard, and sharp stalks and flowers, it affords the best winter-fodder for sheep, and is, therefore, cut down in large quantities. It bears the greatest resemblance to the *Centaurea salmantica*, but its flowers are very small, and the stalk branches out with pennated leaves.

abundantly

abundantly in this country. Lastly, the whole is secured with green fods, to prevent these plants from being dispersed by the wind, as they are also used for fuel.

The roofs of their huts are constructed of thin rafters, transversely covered with reeds ; above these is placed a stratum of dry plants, and afterwards turf or loam. The inclosures of their farms are made of green fods, and the tops covered with two boards forming an acute angle ; the walls of the houses, on the contrary, are built of large, unburnt bricks, and coated with clay or cow-dung ; and sometimes of turf or Tifak. The stables are erected of wicker-work plastered over with cow-dung. These Tartars construct their mills under ground, within a covered place ; the machinery consists of an horizontal indented wheel, three fathoms in diameter ; it is turned by an engine above ground, which is worked by horses or oxen. This wheel acts upon another small cogged wheel which turns the mill-stone, and is placed at the entrance of the subterraneous room. — On their very fertile loamy soil, they principally cultivate wheat, barley, and millet ; but it is unfavourable to the production of rye.

During the whole of our journey on these steppes, we met with only a few Armenian and Greek carriers, who were conveying the white-vine of Taurida to Nakhtshivan, where it is converted into Champagne and Rhenish, for the use of the provincial towns. Yesterday, however, the steppe became more lively, as it was traversed, sometimes by the transports of salt passing from Taurida to the governments of the interior country, and sometimes by Greek shepherds, who, at this sea-

son of the year, migrate in a southern direction with their huts, implements, cattle, and flocks, towards the sea and the Dnieper, where they find good pasturage in the vallies, and a warmer climate.

On leaving Kuyenli, we crossed a considerable height adorned with large sepulchral hills; then proceeded through a valley to the village of Yershi, five versts distant; and afterwards again passed several eminences. Advancing to the left towards the Sivash, which may be seen from the heights, we arrived at the village of Dshepe, which is at a distance of twenty versts. From this place we pursued our journey; and after having travelled seven versts farther, we reached the village of Tugerek, situated on the left of the road near the Sivash, where we obtained accommodations for the night. We observed many other villages at a distance, of which that of Kypshak is remarkable, on account of its name. — This afternoon a collection of thunder-clouds brought down a heavy shower of rain, which was speedily succeeded by sun-shine. The steppe, which rises but little above the sea, is diversified with vallies, which decline towards the Sivash, and exhibit many traces of the ravages committed by floods. Some of these low grounds are inundated by that river, when its waters are swelled by long continued easterly winds, for which reason, instead of proceeding along its bank, the usual road, we were obliged, on the 28th of October, to take a circuitous route of six versts, over an uniform saline plain, and pass the villages of Koi-Tshokrak and Kut-shuk-Tshokrak before we arrived at Perekop. Here, by the recommendation of my old friend

HABLITZL, we met with a most hospitable reception from Lieutenant Colonel TARANOF, inspector of the salt-lakes; under whose hospitable roof, on account of the badness of the weather, we remained till the following day.

END OF THE FIRST VOLUME.

Vig. 14



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END OF THE FIRST VOLUME.

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