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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. II.

LONDON:

PRINTED FOR JOHN STOCKDALE, PICCADILLY.

1812.

82317797

35th Year

1917



Strahan and Preston,
Printers-Street, London.

TO
HIS MAJESTY,
THE
MOST SERENE, MOST POTENT,
AND
BELOVED EMPEROR AND AUTOCRAT
OF ALL THE RUSSIAS,

A L E X A N D E R,

ſc. ſc. ſc.

MOST SUBMISSIVELY DEDICATED.

HIS MAJESTY

HIS MOST EXCELLENT MAJESTY

GEORGE THE THIRD

OF GREAT BRITAIN

BY APPOINTMENT

PRINTED BY

ROBERT CLAY AND COMPANY

MOST GRACIOUS SIRE,

YOUR Imperial Majesty has already exceeded the hopes of the faithful Ruffians, whose joy at your accession to the Throne was universal.

Having served that great and illustrious Sovereign Your Imperial Majesty's Grandmother, upwards of thirty years, not only from motives of duty; but likewise from a sincere attachment to her mild Government; and being now arrived at the sixtieth year of my age, I feel a just pride in joining the general voice, and thus publicly expressing my admiration of Your Imperial Majesty's humane and benevolent disposition. These sentiments, however, are by no means new in my breast; for I entertained and professed them, when I had the good fortune to observe and admire Your
Imperial

Imperial Majesty's exalted mind in the Grand Duke, and Successor to the Russian Sceptre.

The glorious and happy days we have experienced during the reign of the Great Catharine will now return to Russia: a new and happy æra commences with the XIXth century, in the destiny of this Empire; which appears to have been peculiarly selected by Providence to counteract the destructive progress of anarchy, and to become the asylum of civilized manners, as well as of the arts and sciences.

May the same benign Providence grant my most cordial wishes! — Thus, Your Imperial Majesty's reign, which is calculated to diffuse universal happiness, will in glory and duration even surpass that of your late, and still revered, maternal Ancestor; in the same degree as that Great Princess excelled the more early Founder of the grandeur of Russia.

The

DEDICATION.

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The present performance is likewise the fruit of that protection and munificence which the Great Empress conferred upon the useful sciences. I have reason to rejoice, that my life has been spared, till Her excellent and gracious Grandson is seated on the Throne; and that I have an opportunity of laying at His feet this part of my labours.

Most Serene and Puissant Monarch,

Your Imperial Majesty's

Most devoted Subject,

P. S. PALLAS.

Akmetshet,
24th April, 1801.

THE AUTHOR'S PREFACE.

IF this were a proper place to inform my readers of the disquietude and hardships, which oppress me in my present residence, and embitter my declining days, I could easily apologize for the late appearance of the second or concluding volume of these Travels. From the observations occurring in pp. 363 and 364, it will by no means be difficult to conjecture the causes, that have principally occasioned such unexpected delay. There are, however, other circumstances which deserve to be stated. Among these, I shall in the first place particularly mention, that, for want of leisure, I did not immediately digest my Observations on the Crimea in the same order, and in so complete a state, as those related in the first volume: hence I could not supply the deficiency, and reduce them to a fair copy, without bestowing on it a considerable portion of labour. Another motive arose from my anxious wish to visit several districts a second time, with the view of rendering my remarks more perfect. Lastly, the frequent interruption of my health should also be taken into consideration; and I must confess, that literary pursuits at the desk are now to me more fatiguing than at any former

period of my life. I trust, therefore, the reader will, on account of these circumstances, not refuse his indulgence. — I do not, however, thus intend to bid farewell to the learned world: should I survive this fixtieth year of my age, so as to enjoy the return of a few springs, I propose henceforth to employ myself in the publication of some works commenced several years since. The materials for these performances are in a state of forwardness, and partly arranged: perhaps, then, by the bounty of providence, I shall be able to conclude them, and to repose at length with satisfaction towards the close of my career.

Lastly, I am here obliged to correct an error, which my predecessor *Güldenstädt*, as well as myself, have accidentally committed in the first volume of these Travels. In the 367th page of that volume, it has been stated that “this eminence presents no species of rock, except the very ancient lime-stone, which forms the whole of this mountainous tract,” I candidly admit, that I have been misled by drawing an inference from the collateral knolls and ridges, and by applying it to the central summit of the mount; which, at the time of my visit, was covered with a thick rime, or loose snow. Lately; however, *Count APOLLOS MUSSIN-PUSHKIN*, has obligingly sent me some specimens of granite and granitell, taken from the same apex; and which leave no doubt, that this isolated part of the Caucasus contains a rocky grain of the granite kind: on the surface of which is deposited the calcareous matter usually found in mountains.—From a laudable zeal of exploring mineralogical objects, the noble Count has,

in the preceding year (1800), at his own expence undertaken a journey into the lofty regions of Caucasus ; and we may justly expect many important elucidations of this remarkable chain of mountains. He is, indeed, one of those few *persons of rank*, who devote their talents and fortune to the advancement of science.

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

- Plate I. A View of the Gate of Perekop, or *Or-Kapi*, with part of the line that intersects the isthmus of the Crimean peninsula ; drawn from the side of Crim-Tartary. — In front are seen carts from Ruffia Minor, laden with grain, in order to take salt in return ; farther, travelling carriages, and waggons of the Tartars, drawn by camels or horses ; a Ruffian post-coach, and other vehicles, in consequence of which this entrance into the Crimea presents a lively scene almost throughout the summer. p. 7.
- Plate II. The upper part of the narrow Valley, and the Town of *Bakhtshifarai*, together with the palace of the Khan, the principal Mosque, the sepulchral monuments of the Khans, and the garden belonging to the castle ; the whole being drawn from a slight eminence. — By the intermixture of gardens surrounded with Lombardy poplars, by the turrets of the mosques, and the ornamental chimnies, this town affords an agreeable picture. pp. 27. 29.
- Plate III. A Prospect of *Eski-Yourt*, or the ancient sepulchral monuments, near the village of that name, immediately below Bakhtshifarai. In front appear some Tartar tomb-stones ; of which, those erected to the memory of males, are decorated

corated with a turban. Tradition relates, that in the most respectable of these buildings (distinguished by the name of *Atzitz*), are deposited the remains of the daughter of a Prussian Sheikh, who was married to one of the Crimean Khans. According to report, this lady caused the mausoleum here alluded to, as well as the fountains at *Eski-Yourt*, to be constructed at her own expence. p. 38.

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clearly

clearly exhibits the manner, in which the white calcareous strata are horizontally disposed on the surface of the blackish schistus extending into the sea; and, at a distance, lies the Cape of Balaklava, which consists of marmoraceous limestone, and abruptly advances into the sea. p. 91.

Plate VIII. A charming View of the Valley and Village of Tshorguna, one of the most beautiful in Crim-Tartary, and the property of Privy Counsellor HABLITZL. There is also represented the ancient tower, the garden, and a Turkish dwelling-house. In front, appears a Tartar shepherd; and in the back-ground are the mountains which enclose the valley of Baidari. p. 100.

Plate IX. A Prospect beyond the Harbour of Balaklava, from the western side; taken from its upper point; in order to represent the town now inhabited by the Greeks attached to the battalion of Albanians, as well as the ancient Genoese fort: beneath the latter, and between lofty mountains, is the entrance into the harbour. p. 131.

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situated

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N. B. To this volume are likewise annexed the three maps illustrative of the different routes, and which were promised in the preceding part of these Travels.

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

VOL. II.

B

THE LIFE OF

BY

CHARLES FRANCIS

AND

WILLIAM

OF THE



Travels in the Crimea.

SINCE we left the rivulet Berda, we had hitherto only travelled over the steppe of the Nagays, or, as it is called, the Crimean Steppe; which, about fifteen years ago, previously to its subjection to the Russian Government, and while under that of the Khan of this peninsula, served as a place of pasturage for the numerous flocks belonging to the nobility and other opulent inhabitants: it also afforded a place of refuge for the wandering hordes of Nagays, who had submitted to the Khan of Crim-Tartary. Excepting the villages of the Kirghis, a people who employ themselves both in commerce and in the culture of the soil, no fixed habitation could be perceived in this region. Those Nagays, however, who have been removed thither from Mount Caucasus, and the banks of the Kuban,

stance they have received the Greek name of NEON TEIXOS, or the New Wall. At present, there still remains a strong rampart erected by the Turks, and extending from the Black Sea to the Sivash : it is accompanied by a deep trench, which is still in good condition, being defended by double walls built of free-stone. When it is considered, that the stones for erecting these fortifications could not be obtained from a nearer place than Saribulatskoi-Pristan, which is more than fifty versts distant, the magnitude of the undertaking justly deserves our admiration. The fosse is about twelve fathoms wide, and twenty-five feet deep ; but the height of the rampart has been somewhat reduced by the effects of time. The western line of defence is five versts and a half in extent from the entrance to the Black Sea ; and presents, on this side, three batteries, the strongest of which closely borders on the sea-shore. In the Eastern direction, the distance is computed to be three versts to the strait of Sivash ; and there are only two batteries on this side, one of which is likewise contiguous to the opposite shore. The whole breadth of the isthmus, being eight versts and a half, nearly corresponds with the account given by Strabo, who computes it at forty stadia, about five of which are equal to one Russian verst ; and thus affords a new instance of the scrupulous accuracy with which that ancient geographer has described the Black Sea, the Sea of Azof, and particularly the peninsula called Crimea.

As the Russian word *Perekop* signifies an entrenchment of the isthmus, the Tartar name *Or-Kapi* denotes the gate of the line, or fortification ; indeed, the only entrance into the Crimea, by land, is over a bridge, and through an arched stone gate,

both erected at the side of the fortrefs. Contiguous to the gate, in an eastern direction, and within the precincts of the fosse, is situated the fortrefs of Perekop. It is a model of irregular fortification; which, together with the walls of its deep ditch, is constructed wholly of free-stone. It forms an oblong square, extending along the trench which terminates the line of defence. On the side adjoining this line, there are no outworks; but, on the three other sides, the fort is strengthened by an additional deep fosse, which however is half filled with luxuriant weeds; the whole amounting to one hundred and fifty-eight fathoms in length; and, when computed from the fosse of the line, eighty-five in breadth. At the North-western angle, there is a pentagonal bastion, serving as an outwork; another of a sexagonal form at the South-west, and a third with two angles at the South-east. But, at the North-eastern angle, the sexagonal bastion is farther extended into the fosse, so as to cover a narrow passage leading to a deep and excellent spring, rising between this ditch and the interior fortification. The chief entrance to the fortrefs is near the Southern curtain, on the side of which a projecting demi-bastion has been erected. Another outlet has been contrived at the eastern extremity. The inner fort, which is more elevated, and of a similar structure, extends to one hundred and ten fathoms in length, and sixty in breadth. It is furnished towards the northern angles with two square bastions, that project on the fosse of the line; and over the inner wall, there is a brick cavalier of a sexagonal form, in the midst of the northern curtain. At each of the two southern angles, there is an irregular bastion; and, in the centre of the curtain, appears the principal gate.

Over



Waltman sculp

Over this, I observed the figure of an owl, hewn in stone, being the peculiar coat of arms of TSHINGIS KHAN; which likewise appears to have originally belonged to the princes who reigned in the Crimea, and ought therefore to have been incorporated with the Great Seal of the Russian Empire. Within the fortress, there are yet remaining a sort of castle, built of stones; several barracks of brick-work, but in a ruinous state; and a mosque or *metfchet*. Lastly, we met with a well in the castle, and another in the outworks.

The houses of the suburbs of Perekop were formerly dispersed in a very irregular manner, on the southern side of the fortress; but they are at present situated at a distance of three versts within the country; and, beside several streets and many booths, they include what is termed the *Armanskoi Bazar*, or Armenian Mart. In the vicinity of the gate, however, there are only a few houses, partly within, and partly on the outside of the line; being inhabited by Russian officers, appointed at the salt-magazine, or by those belonging to the garrison. When I first visited the Crimea, the whole garrison consisted of a detachment of two hundred men, commanded by a captain; but, since the year 1797, a whole battalion has been stationed at Perekop, the commanding officer of which is also governor of that fortress.

In the first plate, the reader will find a distinct view of the fortress of Perekop; of the gate and line of defence drawn from the side opposite to the Crimea; and of the bustling commercial intercourse, which usually prevails there during the summer.

Although the Crimea is at present united to Russia, Perekop will, on many accounts, always remain a post of the greatest consequence;

consequence ; in some respects to Russia, and in others to the Crimea. If, for instance, the plague should ever spread its baneful influence into Crim-Tartary ; an event, which the constant trade carried on with Constantinople and Anatolia, might easily produce ; or, if seditious commotions should arise among the Tartars, whose loyalty is still doubtful, in these cases Perekop would effectually secure the empire, by closely shutting the barrier. On the other hand, this fortress not only renders every attempt at desertions from the Crimea into Russia very difficult ; but if, in future, the project of opening free ports should be realized, and thus the important commerce from the Black Sea to the Mediterranean, and to Anatolia, be vigorously promoted, Perekop would then afford the most convenient situation for a custom-house. Farther, if the best ports of the Crimea were appointed, in the same manner as those of Toulon and Marseilles have been selected for all the southern parts of France, in order to establish places of quarantine for all ships navigating the Black Sea and that of Azof, so that all vessels destined for Taganrog, Kherfon, and Odeffa, should be obliged to perform a certain quarantine at Sevastopol, Kaffa, and Kertsh, as has already been twice proposed, — the important pass of Perekop would for ever secure the open and more populous provinces of the interior parts of the empire from that terrible scourge, the plague. Thus, all danger might be obviated, not only from the Sea of Azof, the coasts of which are in every direction exposed to the contagion, so that they can with difficulty be protected ; but also from the ports of Kherfon, Nikolaef, and Odeffa. At the same time, the expence of maintaining various places for quarantines might be greatly reduced, and complete institutions of this nature be speedily established.

During the prevalence of East winds, a disagreeable smell from the *Sivash*, or Putrid Sea, is strongly perceived at Perekop. It is nevertheless believed, that these vapours preserve the inhabitants from those intermittent fevers which were formerly very frequent in the Crimea; a remark which I have also heard in other places respecting the febrifuge effect of exhalations proceeding from the sea-shore.

On the 29th of October, we pursued our journey towards *Symphoropol*; which, at that time, was the seat of the Tauridan Government.

The northern three quarters of the Crimean peninsula exhibit an irregular plain or steppe, which is occasionally diversified with deeper spots of ground, or hollow glens. The soil varies in its quality; but for the most part, and especially at the angle which terminates between Perekop and Koslof, it is either sandy on the surface, or consists of sand combined with clay. The Tartars call this angle *Tarkhon-Dip*, and the Russians, *Tarkhanskoi-Kut*. In some districts, for instance, from Perekop to the salt lakes, this plain is of a dry, clayey, saline nature, resembling a marine viscous mire, and is not unlike that of the Caspian Steppe: it declines imperceptibly towards the salt lakes; and its ground was very slippery, in consequence of the rain that had fallen during the night.

The distance from Perekop to *Armanzkoi*, or *Novoi Bazar*, is computed to be four versts; but it appeared to be rather less. Eighteen versts farther, we arrived at the southern extremity of *Tusla*, or the old salt lake *Staroë-osero*; the steep banks of which are about six feet higher than its level shore, where the *Salsola ericoides* vegetates with great luxuriance. I forbear,

at

at present, to describe this saline lake, as well as the others occurring between it and the Sivash; the existence of which fully corroborates the above cited passage of Pliny. In the sequel, I shall give a general sketch of all the salt lakes in the Crimea that appear to have arisen from the same source, and to possess similar properties. It deserves, however, to be remarked, that the inexhaustible reservoirs of salt in the vicinity of Perekop are, both with respect to their great abundance, and the large exportation of that commodity to Russia, the most productive of the whole Peninsula. From this quarter, White and New Russia, as well as Russia Minor, and the province of Kharkof, are supplied with salt, which is conveyed to those provinces during the summer, in numerous vehicles drawn by oxen. Formerly, therefore, a member of the Tauridan Chamber of Finances constantly resided at Perekop, where a peculiar salt-office was then established. According to report, this proved to him a very lucrative appointment; though Government has, at present, by farming out such important branches of the revenue, more than doubled his former income.

After travelling twenty-six versts, we arrived at the station or *Tishoon*, or *Terekly-tshufoon*. Since the immortal late Empress visited Taurida, all the principal roads of this country have been embellished, at every verst, with elegantly hewn triangular stones, pointing out the respective distances. Farther, at every tenth verst, there has been erected a well-proportioned, and more conspicuous, round column, the upper part of which is ornamented with an octagonal head, terminating in an obtuse point. These monuments, which will long resist the effects of time, might have superseded the necessity of those wooden posts,

posts, which have recently been placed, for marking the distance of each verst.

On leaving Tifhoon, we passed over a handsome bridge arched with free-stone, and built by the Turks across an arm of the Black Sea, which extends to a considerable distance into the country, and at length turns toward the North. We then crossed several smaller bridges, erected over marshy saline glens, or hollow grounds, which take their direction from the gently sloping and viscous steppe toward the Black Sea. The second stage, being eighteen versts distant from the last-mentioned place, is *Dürmeen*; where the usual road, leading from Perekop to Koslof, turns to the South-west.

About halfway from the next stage, the steppe rises imperceptibly; the soil becomes black, is occasionally covered with a grass sward, and underneath exhibits the first beds of yellowish or reddish shell-lime, composed of fragments of bivalves and stratified oolites; the grains of which uniformly consist of very small testaceous particles. Two broad ridges, but with a level surface, also discover a similar soil on the top, as well as in the lower stratum. On the first of these is situated the Tartar village of Kara-Kodsha, in the front of which, near the public road, we took notice of an ancient cemetery, distinguished by peculiar tomb-stones, in the shape of obelisks; a form which we had not hitherto observed in the Crimea.

After having passed the stage of *Aibar*, twenty-six versts distant from *Dürmeen*, the steppe again presented a yellow, clayey, and level surface. We then travelled twenty-two versts, and arrived in the dark at the village of *Ablana*, which is divided into three districts. The darkness of the night

obliged us to rest at this place, which, beside a mosque, or *metshet*, has a *medrefs*, or school.

Early on the 30th of October, after once more changing horses at Mentlertshik, sixteen versts from Ablana, we arrived about noon at Sympheropol, a town twenty-six versts distant from the former place. Here my friend, M. Taranof, received me in the most obliging manner, and accompanied me to the winter-residence that had been prepared for my family.

Nothing can be conceived more gratifying, after an irksome journey over barren and uniform plains, than a view of mountains, and a country presenting hills and beautifully variegated woods, which are occasionally intersected by the whimsical meanders of rivulets. In addition to these charms, the mountainous parts of the Crimea also offers an uncommon variety of delightful prospects, in the advanced autumnal season. The agreeable surprize we experienced, on arriving at the pleasant valley which is watered by the little river Salgir, may be easily imagined; especially as our expectations were raised still higher, by the view of distant and more elevated mountains.

The fine, and often very warm weather which prevailed during the whole of November, and continued till December, afforded me frequent opportunities of collecting, at this late season, the seeds of several rare plants; while the vestiges of others inspired me with new hopes of pursuing my botanical researches with greater ardour in the ensuing spring. The impaired state of my health, however, set bounds to my zeal: for I had so severely suffered during my long journey, that I could but seldom venture abroad; and was therefore obliged to pass the months of December and January within doors, in order to recover some degree of strength.

The winters, and the weather in general, are very unequal and variable throughout the Crimean Peninsula; both depending greatly on the different situation of mountains and vallies in the more elevated parts of the country. I shall enter into a more particular account relative to this subject in the outline which I propose to give in the sequel, of the natural history of the Crimea; and content myself, at present, with briefly describing the state of the weather during the winter of 1793 and 1794. In the first half of November, the weather was uncommonly fine, dry, and pleasant, with a regular East-wind; which, in this climate, is uniformly attended with a serene atmosphere. Several days in this month were so warm, that the neighbouring mountains could not be ascended without profuse perspiration; though there had occasionally been frosts, and some snow had also fallen, in the preceding month of September; when the elevated regions were covered with rime, both of which however speedily disappeared. After the middle of November, we experienced a few cold days, together with a slight fall of snow, and hazy weather, which continued till the 27th. On this day, at half past eight o'clock in the evening, a slight shock of an earthquake was felt at Baktshifarai, Karassubasar, and Perekop, but which was incomparably milder than that which convulsed the whole southern coast of this Peninsula in the year 1790. On the same day the wind changed to the South-west; and flights of bustards, consisting of from ten to twenty brace each, were perceived withdrawing towards the mountains, whither they were probably induced to resort by the heavy snow that had fallen on the steppe, and in the peninsula of Kertsch. At the same time, however, a

thaw commenced with a tempest proceeding from the Archipelago, and accompanied with alternate showers, which swelled the hilly rills, and precipitated them from the mountains with a violent noise. The month of December again produced many serene days; during which the horizon, towards the North where the steppe of Perekop presents an open view, constantly terminated in dark clouds of snow, such as are usually observed here in the clearest days of autumn and winter.

In the first days of January 1794, the frost recommenced, and was on the fifth succeeded by a heavy snow, which covered the plain to the depth of nine inches, and continued till the end of the month. This remarkable phenomenon was recorded by excursions on sledges; to which, however, the inhabitants of the Crimea afterwards became very indifferent, in consequence of the severe winters they experienced between the years 1798 and 1800. In the beginning of February, there was a sudden and complete thaw, and the starlings made their first appearance on the 6th. A cold easterly wind, with frost, followed that from the South-west, which had hitherto prevailed; and on the 12th, the change of the moon, after a few gentle showers, produced serene weather; so that on the 13th and 14th, during mild weather and sunshine, vegetation rapidly advanced on the southern side of the mountains, and in the groves. Thus we observed varieties of the *Crocus*, and *Viola odorata*, presenting their first blossoms; the *Adonis verna*, *Hyacinthus racemosus*, and *Ornithogalum pilosum*, shooting forth their stems; and the plough commencing its early labours in the field. On the 16th, however, at noon, a sudden North-east wind was again productive of frost and snow. On the 18th there
arose,

arose, with the new moon, a violent tempest, which continued with almost unabated fury, and with little variation from the North-east to the South-east, till the middle of March, when it ceased with the succeeding new moon. By this unusual state of the atmosphere, vegetation was evidently checked, both from the severe cold, and the dry nature of easterly winds; infomuch, that the cornel-tree scarcely began to flower about the latter end of March; though, in former years, its blossoms often expanded early in the month of February.

Throughout the winter, however, the cold never exceeded ten degrees below the freezing point, according to Reaumur's thermometer; and, though the Bosphorus was several times covered with ice, yet this never became stationary. On the other hand, the ice drifted from the sea of Azof, flowed the whole winter, and it usually continues till a late period of spring. This circumstance accounts for the coolness of the weather during the vernal months; as the ice from the lakes of Ladoga and Onega generally produces a similar effect at Petersburg, though the rivers in the southern parts of Russia are open at an earlier season.

The town, which I chose for my winter-residence, is known by two different names. While subject to the government of the Tartars, it was called *Akmetshet*, or White Church; but, under its new masters, the ancient Greek name of *Symphoropol* has been restored to a large and charming plain situated towards the North of the old town; and on which are built the Palace of the Governor, and the Halls of Justice for the whole
Crimea.

Crimea. It was farther intended to raise, on this spot, a modern town, with a beautiful cathedral. Hitherto, however, a few houses only have been built according to such design; so that, since the year 1798, the Tartar name of the old town has again prevailed.

The situation of Akmetshet is delightful; as the elevated plain, on which it stands, rises still higher towards the South-east; is surrounded on almost every side, at irregular distances, by mountains and hills of calcareous marl; and it is intersected, on its eastern side, by the rapid course of the Salgir; the opposite right bank of which, being considerably lower, presents a pleasing view of meadows and gardens. This peculiar site, however, exposes the town of Akmetshet in a remarkable degree to the tempests that are so frequent in this country, but especially to those from the South-east, which penetrate through the dales intersecting the opposite mountains; as likewise to the East and North-east winds which, like the northern gales, blow over the plains; and also to those proceeding from the South-west, or from Sevastapol, that are usually accompanied with rain; while those from the East are attended with a serene sky and dry weather. On the plain formerly designed for enlarging the town of Sympheropol, there has been erected an elegant residence for the Governor; which, since the translation of the seat of government, has been converted into barracks; and, at the distance of about half a verst, there are several edifices intended for courts of justice. Beside these, we met only with a few scattered habitations, among which, the School-house deserves to be mentioned. Between the original palace of the governor and the old town, or the bank of the Salgir, Suwarof
(whose

(whose name surpasses all titles *) has erected a redoubt, which is farther strengthened by the natural trenches gradually formed by the currents of rain-water; and in which, according to the plan now abandoned, it was the intention of Government to build a cathedral. During the latter period of the preceding reign, building was accordingly commenced in several quarters, especially on the declining bank of the Salgir, in a western direction towards the fields; and, in the old town likewise, a few respectable houses have been finished along the banks of this rivulet. Since the Crimea, however, has been incorporated with the provincial government of New Russia, of which it at present forms a separate district, the rising prosperity of this town has very considerably decreased; and many of the deserted houses are already in a ruinous state; because the commercial intercourse is checked, in consequence of the diminished number of consumers, so that the inhabitants have been induced to disperse.

The old city of Akmetshet is built in the manner of all Tartar towns; it exhibits throughout narrow streets crossing each other at irregular angles, being unpaved, and extremely filthy. As all the courts or premises are encompassed with high walls, and the dwellings, built within these courts, are very low on the ground, little of such habitations can be perceived; and a stranger is apt to imagine that he is wandering among half-ruined walls raised with rough lime-stone. The houses are uniformly built of a white calcareous fossil resembling marl, which is very common in this country, cannot be split into

* This unqualified praise will, probably, be contested by the impartial historian.

flags, but breaks in irregular masses; and in which are observable many of those petrifications, that are known by the name of lenticular stones. When the inhabitants employ this fossil in building, they mostly use it in a rough state, excepting those pieces intended for the corners, or for framing the windows and doors of their dwellings. In all the Tartar towns of this peninsula, the mortar is made of clay, more or less combined with lime, to which a certain proportion of sand is added, in order to render it more durable. Out-buildings, or offices, are generally constructed of plastered wicker-work; but the roofs are covered with light hollow tiles disposed on a stratum of interwoven osiers, and placed upon clay. These roofs, however, unless they be secured with lime, require frequent repair, in consequence of the prevailing tempests.

Beside the governor's house already mentioned, which was formerly embellished with a fine garden, and is now converted into barracks, there are at Akmetshet only the following public edifices; namely, three Tartar metshets, or houses of prayer*, with their steeples (misgir); from the top of which the priest (mulla) calls the faithful to prayers, four times in twenty-four hours; a very indifferent Græco-Russian church, which serves for a cathedral; and another of some consideration, built on the market place by a society of Greeks who settled here in 1797; an Armenian chapel; a Tartar bath, since converted into a public prison; and a number of barracks situated in the higher, or South-eastern, part of the town. Near the city, on the left bank of the Salgir, four mills are turned by a canal

* Formerly there were five in this place, but two of these metshets have been demolished.

proceeding from this rivulet; and a little lower are two others, one of which is contiguous to the Salgir, and the other is erected on a farm belonging to the late Governor Shegulin; which, as well as the village of Bakhtsheli, is only two versts distant from the town. The last of these mills is turned by the little brook Bala-Salgir, which receives a still smaller one, denominated Abdall. In their vicinity, we meet with several excellent orchards, the most remarkable of which is that belonging to M. Hochfeld, Counsellor of the College, who has bestowed considerable pains in establishing it, together with a distillery.

Akmetshet was, till lately, the residence of the Kalga-Sultan; who, in point of rank, was second only to the Khan of Crim-Tartary; and who was always chosen from the race of Khans bearing the name of Ghirei. The former resided in a handsome palace, situated above the town, on the left bank of the Salgir; but it was entirely demolished shortly after the subjugation of the Crimea. The spot, on which this edifice was erected, can be ascertained only by a creek of the Salgir, that contains the water of a copious spring rising at the foot of a steep bank, composed of calcareous rock. Here the Kalga-Sultans formerly kept a few pleasure boats, but the site of their palace is now occupied by breweries.

The Salgir, in general, is passable in many places by persons in boots; being an inconsiderable rivulet that glides over a wide stony bed. When, however, snow happens to fall, and suddenly to dissolve on the mountains, or after heavy showers of rain from the higher countries, the Salgir swells to such an extent, for the space of twenty-four or thirty-six hours, and

sometimes even for several days, that it completely fills its stony bed; and its stream flows with the noise of a formidable torrent, sweeping away men, cattle, and carriages, so as to render its passage extremely dangerous: its water is then unfit for culinary or domestic use, until the clay, which renders it turbid, has subsided. To remedy this inconvenience, the inhabitants of the town formerly possessed an aqueduct, by means of which water was conveyed through subterraneous pipes, to a distance exceeding three versts, from a spring rising near the western heights, over which the road leads to Bakhtshifaraï. Although this neglected work was restored to its former useful state, in 1795, yet it was soon after destroyed by the avaricious Gypsies, who employ themselves in carrying fresh water about the town in casks, so that it is, at present, of no service. Hence the people are compelled to drink the water of the Salgir, or of some other springs issuing from its lower bank; which, however, is slightly impregnated with calcareous matter.

There are but few kinds of fish frequenting the Salgir. Loach and minnow are the most common; and a small species of barbel is the largest of the finny tribe in this rivulet. Trout are caught only near its source, and they never approach the environs of the town. On the other hand, great numbers of craw-fish are taken in the deeper parts of this stream, as well as in the surrounding brooks, and they possess an exquisite flavour.

The calcareous mountains in the neighbourhood of the Salgir, like those extending to the rivulet Alma on one side, and to the brook Suya towards the east on the other, present only a white or yellowish limestone, mixed with clay, of a moderately hard and porous consistence. This fossil is sometimes found in a laminated

laminated state; but, in other situations, it is disposed in thick masses apparently cast together, and occasionally presents a greater or less number of petrifications, the most common of which are those termed lenticular: they vary in size from a small lentil to that of a guinea, or are still larger*.

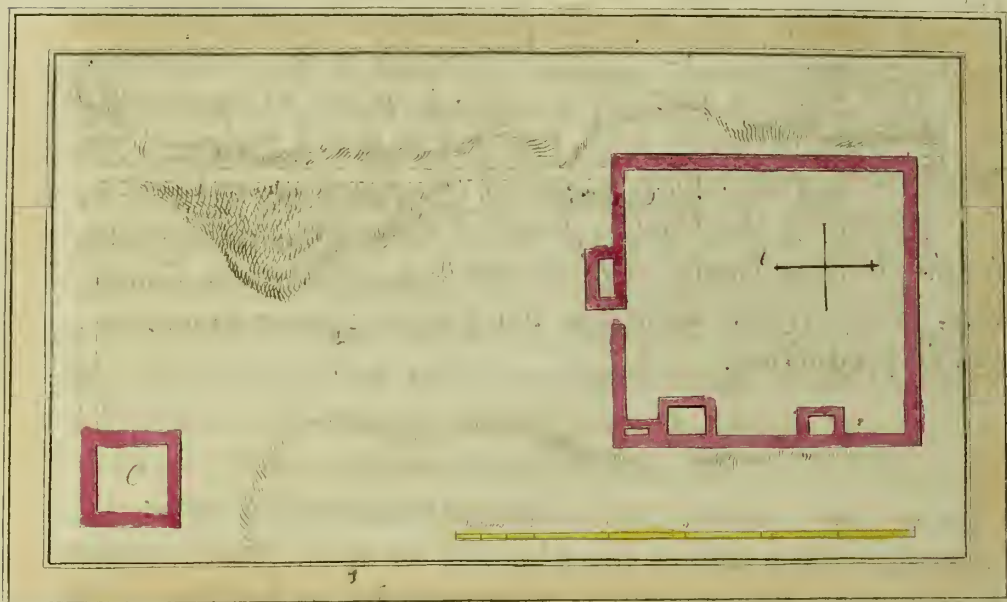
In various places, for instance, on the left bank of the Salgir above the town, as well as towards the Alma, large shells of the diluvian oyster, and of another large and weighty species, are found in this lime-stone, changed into a greyish spathy substance. These shells are singly scattered at the foot of the calcareous rocks, and easily separate from the mineral. Among other petrifications, we also occasionally observed the crested oyster, the crow's stone, or *gryphites*, a few diminutive belemnites, or finger-stones, and a still smaller number of the grains of whelks or spiral snails. On several heights, especially in a quarry immediately on the borders of the town, near the road leading to Bakhtshifarai, some strata of this lime-stone are of a chalky nature, being interspersed with impressions of very thin shells. In other situations, we met with layers of clay and soft marl, generally above those of calcareous stone. In a few places, however, there appeared between the latter a mixed

* I cannot on this occasion omit to express my opinion respecting a fossil, the origin of which has not hitherto been explored. As its external shells have no orifice whatever, and may easily be separated from each other; while its internal cellular texture, consisting of annular divisions and lateral thin scales, has not the least resemblance to the abode of a testaceous animal, but rather to the inner structure of a cuttle fish-bone; I am induced to conjecture, that the lenticular stones have likewise arisen from the shell or bone of a peculiar gregarious species of *Doris*, or *Sepia*, which formerly inhabited the deep; has in process of time been mixed with the calcareous mire deposited by the sea; and thus at length become completely extinct, so that we possess no account of its living state.

fossil, consisting of a yellowish sandy marl, and small roundish quartzose pebbles, being partly decayed on the surface, and scattered among the black or loamy mould : hence an observer might easily be induced to believe, that the water formerly flowed over such regions, and caused the roundish form of these pebbles. All the layers of the horizontal masses decline imperceptibly towards the North ; and most of the mountains which they constitute, appear precipitate towards the South or South-east, in which direction the stratifications rise ; so that their edges, at a distance, present a serrated form, or as if they had been broken off by a violent commotion of the elements. The view of the rocky precipices and walls in the valley watered by the Salgir, as well as in many other dales composed of this calcareous and horizontally arranged fossil, is the more remarkable and striking, as it seems to be of modern origin, and extends over the whole plain of the peninsula. All these masses are, to a certain height, corroded and washed underneath, in a manner exactly similar to that produced by the waves of the sea, after having watered them for a considerable time. It is difficult to decide, whether this singular effect ought to be ascribed to the former, and doubtless more elevated, state of the Black Sea, or to the decomposing influence of the atmosphere. The situation of such vallies above the present level of the water, and the height to which these remarkable calcareous rocks extend in different plains, certainly deserves to be ascertained by the *niveau*.

The whole of this calcareous bed of mountains produces many beautiful and some peculiar plants, which spread in a western direction beyond the Karassuk. The most distin-

guished are, the bushy *Salvia Habliziana*, a tall *Hedysarum*, with white flowers, veined with red; a species of *Gypsophila*, the blossoms of which grow together in round bunches; an *Onosma* with yellow flowers, exclusively found in the Crimea, and resembling the *Onosma simplex*; the admirable *Carduus elegans*, *Carlina lanata*, *Satureia montana*, *Convolvulus Cantabrica*, and *terrestris*, as well as many other more common vegetable productions.



Journey through the South-Western Quarter of the Crimean Peninsula.

IN the beginning of March, the weather became so agreeable, that I could no longer restrain my impatience to explore the remarkable Tauridan Peninsula. I therefore commenced my journey, and left Akmetshet on the eighth of March, directing my course towards Bakhtshifarai, which is computed to be thirty-one versts distant.

The way to the river Alma leads partly over elevated plains, and partly through vallies of a pleasing verdure, between calcareous mountains, situated at a considerable distance from each other, and presenting pit-coal, as well as white layers and terraces; the South side of which is peculiarly diversified. With regard to soil, these hilly regions are nearly similar to those
near

near the Salgir; and they also produce petrifications scattered in the manner already noticed. In some of them we found petrified crested oysters, in a complete state of preservation. At the distance of three versts from the town, we crossed, near a clayey hill, the very source of the spring which formerly supplied the town with water; and which, after joining with a small muddy rivulet, flows into the Salgir. Three versts farther, in a level valley, we passed the brook of Bulganak; which, though inconsiderable near its source, and dried up during hot summers, is nevertheless considered to be one of the principal rivers of the Peninsula, as it discharges itself directly into the sea. Sixteen versts from Akmetshet, we at length arrived at the banks of the Alma, in an open, pleasant, and uncommonly fertile country, which is richly embellished with villages. Along the banks of this rivulet are those extensive pastures, which the Khans of the Crimea usually appropriated to the support of their studs. On the right, we observed the village of *Khaneli*; and some others, among which that of Hadshirbecke, with its numerous Lombardy poplars, presented a beautiful prospect.

The river Alma rises from the woody dales, situated between the Tshatyrdag, or Tent-mount, and the opposite lofty Babugan-Yaila towards the South-west. It receives in its course, beside several smaller streams, two considerable brooks, namely, the Kuifu and Menei, the source of which is at the foot of the former mount. When the snow on the mountains is suddenly dissolved, or after heavy rains, the Alma sometimes becomes more formidable and dangerous than the Salgir. Scarcely a year elapses, in which some persons are not either drowned, or obliged

obliged to save their lives by swimming. Not less hazardous is the rivulet Badrak, which we crossed shortly after the Alma, at a little distance above its union with the latter; on account both of the cavities which that rivulet readily forms in its soft bed, and of the extensive vallies from which it collects its rain-water. We now travelled over rising heights, terminating in a regular plain that extends to Bakhtshifarai; and these, with their steep southern terraces, contribute to form the deep narrow valley, in which that town is concealed. About four versts from this place, there was formerly a country-residence of the Khan; and, near the road, an excellent fountain encompassed with free-stone; but which unfortunately have not escaped the general devastation.

We had arrived very near Bakhtshifarai*, which is hidden in a valley towards the left; and into which we descended by a steep road, without seeing any part of the town. It occupies a narrow dale, extending from South South-east to North North-west, being inclosed on both sides with high rocky terraces, consisting partly of layers of cretaceous lime-stone; which, particularly on the northern side, form curious configurations of corroded and projecting rocks, circular excavations, and several grottos. The small brook *Dshuruk-su*, or Fetid Water, flows through this valley into the Katsha, divides the town longitudinally into two parts, and well deserves that name; because it carries off the impurities of the streets and many common sewers, into which the aqueducts are directed for such purpose. This contrivance greatly contributes to fertilize the cabbage-fields in the valley immediately below the town; for

* *Bakhtshifarai* literally signifies a palace situated in a garden.



the irrigation of which the water of the Dshuruk-fu is chiefly employed, being conducted through canals along the mountainous side; so that the ignorant believe this element to flow upward in the manner of a fountain. The streets being nearly a verst in breadth, on both sides of the brook, and two versts and a half in length, are built on a gradual ascent above each other, very crooked, narrow, mean, irregular, and in a most filthy state; but they are interspersed with orchards. These are ornamented with Lombardy poplars, which, together with the numerous turrets of the mosques, and the handsome chimnies of dwelling-houses, that are in other respects mostly of a wretched construction, afford pleasing views of this ancient residence of the Tartar Khan. I have therefore caused one of these prospects to be drawn, as a specimen taken from the upper part of the town, where the palace of the Khan is situated; and which is represented in the second plate.

The principal street, on the right bank of the Dshuruk-fu, leads to the palace, and is on both sides, for the most part, lined with miserable booths, erected partly of wood beneath the piazzas of the houses; but the street is so narrow that, in many places, two carriages cannot pass without the greatest difficulty; an inconvenience which is greatly increased by a wretched pavement. Many others are scarcely so broad as to admit room for one carriage, and some of the lanes can be frequented only by persons on foot, or on horseback. On account of the copious mud, however, broad stones have been laid in most of the streets for the accommodation of passengers on foot.

The principal embellishments of Bakhtshifarai are, its mosques, or methets, its school-houses, or medres, its baths,
and

and the Khan's palace, together with the sepulchres. There are thirty-one metshets in this town, most of which are well built of free-stone, and surrounded with lofty towers of elegant workmanship; farther, a church belonging to the Greeks, another to the Armenians; two synagogues; and three Mahometan school-houses. Two baths have been constructed here in the Turkish style, with handsome vaulted cupolas; and there are likewise sixteen large buildings, termed *khans*, or inns, serving both as lodgings for travellers, and as warehouses, six of which are uncommonly capacious, and are built of stone; twenty-one taverns; seventeen Tartar coffee-houses; five mills turned by the brook Dshuruk-su; and five hundred and seventeen shops. In this number are included one hundred and twenty-one, where silk stuffs, and other commodities, are exposed to sale by the yard; forty-one in which saddles, and other articles of leather, are elegantly manufactured; one hundred and thirty-five for provisions; twenty-four for shoe-makers; twenty-three, in which large and small Tartar knives, of great celebrity on account of their superior temper, together with other cutlery, are manufactured in great perfection; five braziers' shops; ten kept by barbers; nineteen by taylor's; six by silversmiths, five by gun-stock-makers; three shops, in which ready-made shoes are sold; nine timber-yards; five manufactories of rope, cordage, and hair-lines; eight shops kept by coopers; seven for making and selling felts of wool, and clokes of a similar texture, which are worn in rainy seasons, four earthen-ware shops; five, where tubes for tobacco-pipes are made together with mouth-pieces: twenty bakers' shops; thirteen tan-yards, and Morocco manufactories; six blacksmiths' forges; thirteen shops,

in

in which the Tartars sell *Busa*, a strong liquor, brewed from millet-feed; thirteen possessed by tallow-chandlers, and seven by sculptors. — The number of dwelling-houses in this town amounts to 1561; and the whole population consists of 3166 males, and 2610 females. In this calculation are included, 204 Greeks of both sexes, among whom there are fourteen of noble extraction, and forty-two merchants; farther, fifty-one Armenians; 1162 Jews, 420 of whom are registered as merchants; and nearly 3000 Tartars, in which number are comprehended twenty noblemen, 237 merchants, 173 priests, and seventy-eight students of divinity. According to a privilege granted by the late Empress, the Tartars maintain absolute possession of this town, of which no Russian is allowed to become a citizen. Hence these natives, and the Jews, are its most numerous inhabitants, both being governed by their own magistrates.

The Khan's palace deserves particular notice. It is situated towards the western quarter of the town, on the southern declivity of the valley contiguous to the river; and (as is distinctly represented in the annexed drawing taken from the opposite North side) consists of various dwellings and offices built without any order, and encompassing several court-yards. We entered the first court by means of a gate and stone bridge, erected over the *Dshuruk-su*, which is here confined by a quay. It contains only a few common habitations; but towards the left appears the spacious and beautiful metshet of the Khan, with its two turrets. Farther on are the stables; and, on the right, is the Khan's palace, properly so called, which is embellished with an additional story. In its upper part, this court is enclosed by the walls of an orchard, situated

on a rising ground next the valley, and intersected by terraces. A gate, over which rooms have been constructed, leads on the right to the inner palace yard : and here the entrance to the palace itself is in the left corner, through a spacious lofty porch, enlivened by several cascades. In this place, by pulling down some of the smaller offices, room has been contrived for a convenient stair-case leading to the upper apartments. Besides, there are several rooms, and a capacious council chamber below. The apartments and galleries above-stairs, are decorated totally after the Turkish manner, with carpets and *divans*, or low sofas, oriental landscapes, clumsy paintings on the walls, artificial flowers, chimney-pieces, and stained glass windows. The alterations we noticed in some of these apartments, were made for the reception of the Empress in 1787; in order to embellish them more in the European style. Amidst the dwellings appropriated to the Khan, there is a beautiful oblong spot planted with rose-trees, and ornamented with arbours; above which, a fountain plays its waters into stone basons gradually declining a few steps beneath the surface of the ground. Contiguous to the Khan's residence, are the small, inelegant, and already decayed chambers and offices of the Haram. Over these is raised a *Kiosk* resembling a cage, in which the Khan usually kept his falcons; and whence the North side of the valley, with its diversified rocks, near the upper extremity of the town, presents above the met-
 shet an incomparable and most romantic view. A few inferior gardens have also been planned between the buildings of the Haram; and there is likewise a small bath constructed of stone: but the more capacious marble bath, which formerly stood near the palace, has been entirely demolished.

The

The large orchard being situated on a rising ground, is divided into four terraces, inclosed with free-stone; and which are mounted by a progressive flight of stone steps placed sideways for such purpose. The lower terrace is entirely covered with arbours of the vine; but the upper ones with fruit-trees of every kind, grafted from the best sorts, and especially with pears of an exquisite flavour.

The grand metshet in front of the palace is one of the most elegant temples, and also the most spacious edifice of the kind in Bakhtshifarai. In the interior there is a superstructure, or box, furnished with windows, formerly appropriated to the family of the Khan; and the ascent to which is from without, by a separate stair-case. At present, only strangers, and particularly females, are admitted to this box, when they are desirous to witness the religious ceremonies of the Tartars; and especially the noisy and whimsical dances of their dervises on Fridays, or on the evenings of their festivals, without interrupting their devotion.

Behind this metshet is the commencement of a large burying-ground, which progressively rises in a line with the buildings and gardens. Here are interred all the descendants of the Khan family, together with the principal Mufas, or Nobles, and priests; so that it abounds with funeral columns hewn of stone; among which those erected to the memory of males are distinguished by the form of a turban. In the same place, at a short distance from the church, we met with two elegant modern sepulchral vaults, contiguous to each other, and a third of an earlier date. The former are filled with coffins of the Khans, deposited on the ground, and covered with black and green stuffs. One of these vaults was built by Hadshi-

ghirei. A little farther upward may be seen the romantic tomb of Mengli-ghirei. It is surrounded with arches of brickwork, and beneath these it is shaded with vines and other foliage. On the highest spot, near the border of the uppermost garden-terrace, we observed the elegant mausoleum of the Georgian spouse of the valiant Khan Crimghirei, in a vault representing a cupola, the top of which is embellished with a gilded globe. That of the Khan, and his brother, stands between the metshet and Hadshi-ghirei's tomb, having the form of a large sarcophagus raised of stone, being ornamented with the usual column that represents a turban on the top, and being shaded by the foliage of plum and other fruit-trees. In consequence of an order issued from the Imperial Court, all the buildings of the Khan's palace are kept in as complete a state of repair as possible, not only with respect to their external structure, but also in the household furniture; both of which exhibit a model of rude Asiatic workmanship.

The names of the ancient Khans, whose remains are preserved near the principal metshet of this palace, were explained to me in the following order. Those in the first mausoleum are :

- Batyr-ghirei, died in 1051 of the Hegira, or 165 years since.
- Islam-ghirei, died in 1066 of the Hegira, or 150 years since.
- Mekhmet-ghirei, died in 1075, or 139 years since.

In the second mausoleum are deposited :

- Adil-ghirei, died in 1082 of the Hegira, or 184 years since.
- Murat-ghirei, who deceased in 1093, or 120 years since.
- Safa-ghirei, died in 1104, or 111 years since.
- Hadshi Selim-ghirei, died in 1117, or 99 years since.
- Devlet-ghirei, died in 1125, or 90 years since.

Saadet-ghirei, died in 1137, or 71 years since.

Kaplan-ghirei, died in 1149, or 65 years since.

Mengli-ghirei, died in 1154, or 62 years since.

Selamet-ghirei, died in 1156, or 60 years since.

Beside the vaulted tombs are interred :

Selim-ghirei, died in 1161 of the Hegira, or 55 years since.

Arflan-ghirei, died in 1180, or 36 years since.

Crim, or Kerim-ghirei, died in 1182, or 34 years since.

The elegant upper mausoleum, situated beyond the gardens, contains the body of the once beloved spouse of Crim-ghirei. This Princess died in the year 1176 of the Hegira, or 40 years since (computed from the year 1798): she professed Christianity, and her name was Dilara Biketz.

The most commendable circumstance in Bakhtshisarai, as well as in many other Tartar towns, is the manner of obtaining water from distant heights, by means of subterraneous earthen pipes, either for the constant supply of public fountains, or for conveying it to the premises of the principal and opulent inhabitants. Thus, the superfluous water discharged from stone reservoirs, serves partly to irrigate the small gardens attached to town-houses, and, partly, by means of pipes laid in a sloping direction, to cleanse the common sewers, some of which are contiguous to the public founts; so that these aqueducts not only carry off all excrementitious matter, but also the sweepings of the streets, both being conducted into the brook Dshuruk-fu. The Tartar police is remarkably vigilant over the regulation of these canals, which are supported at the public expence; though, in other towns, for instance, at Akmetshet and Kaffa, they have been destroyed through mere malice and neglect.

Notwith-

Notwithstanding the uncleanness prevailing in its streets, together with the close and damp mode of building, the town of Bakhtsharai is generally reputed to be a healthy place. This circumstance may probably be owing to the continual current of air blowing through the narrow valley, which is not confined even at its upper extremity. Being completely sheltered from the North winds, its site is uncommonly warm: hence the peach, almond, and other fruit trees, as well as the vernal plants, present their blossoms at a very early period; and the weather is generally mild during the winter, while other regions of the Crimea experience severe frosts. All the provisions and necessaries of life are amply supplied from the populous countries watered by the Alma and Katsha, as well as from the mountainous parts, and are sold at reasonable prices.

The trade of this town is likewise very considerable, in consequence of the adjacent villages, and the frequent visits made thither by the neighbouring Murfas, who generally travel on horseback: thus a comfortable subsistence is secured both to the merchant and to the manufacturer.

At the distance of scarcely three versts from the upper part of Bakhtsharai, in a right line, exactly at the beginning of the narrow dale whence the Dshuruk-fu derives its source, we descried *Dshufut-Kalé*, a noted fortress of the Jews, which is visited by all travellers. It is situated on a lofty calcareous promontory, extending from the South, and terminating between the valley last mentioned, and another with which it is connected in a South-western direction. There is a coach-road leading

leading to this place, and crossing the heights which confine the town of Bakhtshifarai towards the South. It then proceeds round the latter of the vallies, as well as a collateral one; is in its higher parts apparently hewn through the bare lime-stone rock; and is about five versts in length. A much shorter road has been made for travellers on horseback, who advance directly from the capital of Crim-Tartary over the rising ground of the valley, passing in its lower part a Greek convent, and ascending the Jewish town by the same foot-path, on which the water is carried thither on asses' backs, in small oblong casks fastened to the saddle on both sides of the animal; and each of which is sold at five kopeeks.

At the entrance of the South-western valley, contiguous to the town, we noticed the burying ground of the Jews, which is shaded with beautiful trees. It contains very decent tombstones disposed in rows, and most of which are hewn after a certain model resembling a sarcophagus, with raised stone tablets at the extremities, in shape not unlike the gables of houses. Some of these monuments are inscribed with Hebrew characters. This little valley of Jofaphat is so highly valued by the Jews, that, whenever the ancient Khans wished to extort from them a present, or to raise a *voluntary* contribution, it was sufficient to threaten them with the extirpation of those sacred trees, under the plausible pretence of wanting fuel or timber.

Dshufut-Kalé commences on the narrowest part of the promontory. It is well inclosed, partly by walls, and also by stone-buildings, both on the higher extremity, and towards the declivity of the mountain, which extends beyond the town. There are two outer gates in this place leading to each of the
sides

sides before alluded to, and which are locked during the night. Although the streets are crooked, narrow, and have a rocky bottom for their pavement, except the principal road, which is provided with broad flags for the accommodation of persons on foot; yet, on the whole, they are remarkably clean. In the centre of the town there is a third gate, by which its former size and present enlargement may be easily ascertained. Contiguous to this gate is the mausoleum, which, according to tradition, has been erected for a daughter of Toktamysh-Khan. It consists of two sepulchral vaults raised one above another, with an ornamental arched portico on its western side. This Princess was artfully seduced by a Murza, or Nobleman, who fled with her to the fortrefs, which, at that time (being about 350 years since), was in the possession of the Genoese. Many houses in Dshufut-Kalé, as well as a metshet, then belonged to the Tartars. The synagogue is a fine edifice embellished with a small garden, for the celebration of the Feast of the Tabernacles. All the court yards are, according to the Tartar mode of building, encompassed with high walls; and the whole is constructed of raw lime-stone, plastered with clay. The place contains about two hundred dwelling-houses closely built together; and the population of both sexes does not exceed 1200 persons. They are exclusively *Karaites*, or, as they call themselves, *Karaimes*; and they receive no other Jews into their community, excepting the Polish Karaites, who, like the former, reject the Talmud. Their bibles are also furnished from Poland; but their dress resembles that of aged Tartars, whose language they have uniformly adopted. Having from time immemorial lived under the government of the Tartars, they

have long carried on trade, as well as manufactures, and practised the mechanical arts.

Towards the North of this little town, the rising ground on which it is situated declines into an extensive plain of a rocky soil, thinly covered with verdure, and producing on its lower part the bushy Christ's thorn, or *Paliurus*. Since the government of the Khans, a small herd of stags has been allowed to ramble at large in this valley; but there are at present only fourteen of these noble animals, of different ages, because many were killed by the gun in the preceding winter. Hence the Jews, according to ancient custom, are not suffered to erect any buildings on this plain, whither they have long wished to extend their settlement. A reservoir of water is provided here for those stags, which are fed during the winter with hay, at the expence of Government; and, though not confined within artificial enclosures, they cannot escape over the rocky terrace, which forms the border of the whole promontory.

Many foundations of stone-buildings may be observed in this plain, which indicate that it was anciently inhabited; and there are several caverns in the steep rock towards the South-western dale, particularly in the vicinity of the Greek convent. According to an account given by Count Tott, and which appears to be confirmed by several inhabitants of Bakhtshifarai, large brass or iron rings have formerly been suspended from an inaccessible part of this rocky precipice; but the truth of such tradition I could not ascertain from my own inspection. The lateral surface of rocks in the whole valley of the Dshuruk-fu, like that in many other dales intersected by calcareous mountains, presents every appearance of having once been washed by the waves of the sea, and is in a manner corroded underneath.

In the eastern valley below Dshufut-Kalé, and immediately under the source of the Dshuruk-su, we noticed the foundation of a former castle of pleasure, belonging to the Khan, and termed *Ashlamà* *. Contiguous to this chateau, there had been an excellent orchard furnished with grafted trees; but there is scarcely a vestige now remaining either of this plantation or of the building.

The Jews, inhabiting this town, employ numerous asses, both for the purpose of riding, and for the conveyance of water and provisions, which are generally carried by animals of burthen; because, under the dominion of the Khans, they were not suffered to ride on horseback; and, on the other hand, the Mosaic law forbids the rearing of mules.

Immediately below, at the distance of about two versts from Bakhtshifarai, is the village of *Dofis*, situated on the banks of the Dshuruk-su, which are in a manner encompassed with cabbage-gardens. Between this rivulet, and the heights rising towards the South, are those ancient sepulchral vaults of the Khans, called by the Tartars, *Eski Yourt*, or, the Old Habitation. A drawing of this remarkable spot, being taken from its southern elevation, and communicated in the third plate, will afford a distinct view of its situation. The modern rage for desolation has also extended itself to these respectable monuments of antiquity; and several of them now present a mere heap of ruins. The latest and most beautiful is vaulted in the form of a cupola; its doors and windows had uniformly been

* *Ashlamà*, signifies "the grafting of trees" and "scions;" hence this pleasure-castle received its name from the adjoining orchard.



framed with cornices of white marble veined with grey, traces of which may still be discovered; but unprincipled persons have profaned this sanctuary of the dead, broken out the ornaments, and basely converted them into chimney-pieces. Between these edifices, we observed a number of funeral-pillars and tomb-stones, many of which are elegantly hewn of marble, and embellished with foliage in *bas-relief*. At present, the neighbouring Tartars are more attentive to these relics, and endeavour, as much as possible, to prevent their farther demolition. On comparing the construction of these sepulchral edifices with that I have formerly noticed at Madhor, Tatartup, and Bolgary*, there can be no doubt respecting the origin of the latter, as well as the people by whom they have been erected.

At the distance of about six versts from Bakhtshifarai, after travelling over level but elevated tracts, between several mountains composed of lime and marl, we reached the rivulet Katsha, flowing through an agreeable valley well-clothed with verdure, though unfavourable to health, on account of its humidity. Here is situated the village *Egis-Oba*, which has received its name from two hillocks appearing on the high road opposite the Katsha; and which are either designed for sepulchres, or for marking the boundary. — Admiral Nicolai Semenovitch Mordvinof is one of those few noblemen who possess the talent of employing their fortunes to the advantage of their native country and their fellow-subjects. Having evinced this excellent disposition on many occasions, and in various situations, both in public service and during his philosophical re-

* The author, in this place, refers the reader to his former Travels (in German), Vol. I. p. 122. Plates VI. and VII.

tirement, he has likewise sacrificed his private emolument to the benefit of the common weal, by establishing in this village, first a manufactory of malleable iron, with a locksmith's shop; next, a valuable tannery, under the superintendance of a German master; and especially an excellent nursery of the best sorts of indigenous and exotic fruit-trees. The ancient Tartar orchards planted near his village, which is now inhabited by a Russian colony, as well as those on the upper banks of the Katscha, are unequalled both for the abundance and excellent quality of their fruit. Hence this place has obtained great celebrity by the aromatic apples of Sinap, which are annually conveyed by land-carriage to Mosco, and even to Peterburgh. In a declining direction, towards the sea, along the banks of the Katscha, there are many orchards, and especially vineyards; the latter of which yield an agreeably sweetish and spirituous, though not very durable, wine. Only a small proportion of this liquor is of a red hue; which, at the time of the vintage, is sold at the price of about one ruble the eimer, consisting of ten Russian quarts*; while that produced in the lower countries of the Alma is of an inferior kind, which is apt to become acid in the succeeding spring; so that, during the autumn, it may be purchased for 70 or 80 kopeeks *per* eimer. Although the mode of culture, and the species of grapes, on the banks both of the Alma and Katscha, are nearly the same, yet the situation of the vineyards in the vicinity of the latter is much warmer, and the land is more fertile. Here the vine is trained according to the manner practised in Hungary, not in single stems, nor in espaliers, but in the manner of bushes; so that each plant may, near the surface

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

of the ground, speedily form a tuft or head, from which a few young shoots are annually raised, with a view to produce fruit in the succeeding year. This treatment, in a proper, humid soil, is more profitable than any other, while it is attended with uncommon advantage in the sale of vineyards; because each vine or bush is, on such occasions, generally valued at one ruble. On the approach of winter, the vines in this country are, as high as the third knot or *eye*, covered with accumulated earth; which is removed and spread on the ground in the month of April, when the young shoots already begin to appear. Hence the vines are in blossom at a much earlier period, and the grapes attain to maturity nearly a whole month sooner than those growing in the southern vallies, where the plants are never covered. The frequent stirring of the soil also remarkably contributes to its fertility. But it likewise occasionally happens, that a late vernal frost defeats the prospect of an annual crop; and I have farther remarked, that in this climate the uncovered vines, even during the severe winters of 1798 and 1799, sustained no injury.

The Katsha, though collecting its waters from numerous vallies and hollow glens, and uniting with several large brooks, is nevertheless a shallower rivulet than either the Belbek or Alma: its course is more westerly than that of the latter, gliding along higher mountains, between the Babugan-Yaila and the lofty Mount Potamis, and at length discharging itself into the sea, in a direction nearly parallel with the two streams last mentioned. Heavy showers, as well as the waters of melted snow, frequently swell the current of this rivulet to a considerable height; yet such increase is of short duration; and,

and, during dry summers, it presents only a shallow brook. Its bed being broad and stony, it may at all seasons be crossed by travellers with less danger than the Alma or the Belbek. Lastly, the Katsha flows through a fine, open, and fertile country, which is in every direction interspersed with Tartar villages, and embellished with orchards.

The calcareous mountains between the Katsha and Belbek become gradually steeper, higher, and more abrupt, standing also nearer to each other. A still more lofty and almost uniform ridge of similar mountains, however, appears beyond the last-mentioned river, proceeding from the western sea-coast towards the East. It is only in one place completely intersected by a dale, which extends in a southern direction from the Belbek to Mankup. A very difficult road, leading over these mountains, was expressly contrived for the journey of her late Imperial Majesty to Balaklava and Sevastopol; but which, on account of its steep southern declivity, especially beyond the ridge, renders the passage for carriages extremely hazardous. Besides, there is a regular post-road on the right proceeding towards *Duvankoi*, or the Village of Prayer, (sixteen versts distant from Bakhtshifarai,) in the vicinity of which we reached the banks of the Belbek in a narrow, steep, and unusually warm dale. Here we descended to the left of the river as far as the extensive plain which ultimately forms the sea-shore. The lower part of the whole valley is laid out in gardens, among which there are vineyards, producing on their marly soil a sweetish, agreeable wine, very similar to that of Champagne; and which, on proper treatment, possesses a like effervescent, or sparkling property. The most valuable forts
have

have been planted near Duvankoi, by Colonel Totovitsh, a Servian, who lives in a state of retirement. On both sides of the valley, the mountains, consisting of marl and lime, are much corroded, (being apparently undermined by springs and rills formed by rain water; while their base is, in every direction, covered with large rocky masses precipitated from the higher parts. Thus, a cloud, which burst in the summer of 1796, near Duvankoi, occasioned such a flood, that numerous fragments of stone and rubbish were carried into the dale, and scattered over a considerable tract of garden ground, rendering the post-road for a long time utterly impassable.—The limestone is, in several of these places, much decayed, and softened from the corrosive effects of nitre, not unlike that appearing about the harbour of Sevastopol. In other parts it is solid, and contains a few evident petrifications. Some of the separated masses include numerous small *helicites*.

The Belbek, Katsh, Alma, and Salgir, are reputed to be the principal rivers of the Crimean Peninsula; though, in other mountainous countries, they would be considered only as large brooks. The torrents, which, in consequence of heavy showers, are suddenly precipitated from the declivities of the higher vallies into these rivulets, have greatly enlarged and excavated their beds, so as sometimes to give them, especially in the autumnal and winter seasons, for several hours or days, every appearance of powerful streams; but, in the summer, they generally dwindle into insignificant brooks. The source of the Belbek is in the lofty mountains of the great *Yaila*, or western alp; and its current unites with many rivulets and springs rising in the mountainous vallies of *Oufenbakh*. In the higher

higher parts, its precipitate course forms small cascades issuing from vallies overgrown with wood. On the contrary, in the calcareous heights commencing at Albat, where it properly receives the name of Belbek, this rivulet flows between a continued chain of wild, rent, and pointed mountains composed of calcareous rocks, which represent whimsical landscapes. In the more elevated regions, it is denominated *Kabarta*; and its banks were, according to tradition, formerly inhabited by Tsherkeffians or Kabardines: hence the district between the upper Belbek and the Katsha, is to this day denominated *Tsherkefs-tüfs*.

Between the country-seat of M. Alexiano, Captain of the Navy, and a mill erected by Vice-admiral Ushakof, on an estate belonging to Count Tihernishef, we crossed the Belbek by means of a bridge raised over a soft bed of that river. Near its mouth, the declining calcareous mountains terminate in abrupt capes somewhat projecting into the sea, and presenting at a distance yellow ferruginous matter. This appears to be a sandy marl, interspersed with small pebbles which here protrude between the lime, as already has been stated. Thus the level clayey height, situated between the mouth of the Belbek and the harbour of Sevastopol, is interspersed with small pebbles, especially with those of a quartzose nature. This arrangement of fossils is evident in several districts between the Salgir and Karassu, which have derived their origin from a similar decayed stratum of stony marl appearing on the surface.

On arriving at Severnaya-Koffa, or the North Point, we descried the harbour of Sevastopol, where a company of merchants have lately erected large inns; because it was intended





to build a kind of suburb, and to establish a market, in order to promote the supply of provisions and other commodities for the part of the town situated beyond the harbour, and which are carried thither from the villages along the banks of the Katsha and Belbek. The North Point, before alluded to, is a continuation of that stony mountain, which, according to accurate mensurations, rises in a perpendicular line from sixty to one hundred and thirty feet above the level of the sea; and its greatest elevation is towards the western sea-shore. From this place, the usual conveyance to the town is in ferry-boats which cross the harbour; but carriages and waggons are generally left behind, at the post-house.

The maritime town of *Sevastopol* is at present called *Akhtiar*, from a Tartar village formerly situated on the North side of the harbour, at the distance of three versts from Inkerman. On account of its excellent port, the building of this place was commenced immediately after the occupation of the Crimea, and it has since very rapidly increased. The town is situated in the form of an amphitheatre towards the South of the harbour, along a neck of land which extends between the small southern bay, called *Youshnaya*, and a still smaller one, termed the Artillery-Bay, as is represented in the fourth plate. The isthmus proceeds from a series of calcareous beds, which rise progressively as they recede from its extremity towards the shore; being somewhat more than thirty feet high near that point, but attaining the height of one hundred and ninety feet above the surface of the sea, at the upper part of the town. This elevation, together with the opposite steep bank, likewise composed of lime-stone, incloses the southern bay, which is

also called the Little Port. When viewed from above, it appears not unlike a cleft, so that the masts of ships cannot be perceived at a short distance from the coast. Sevastopol is built in parallel streets on a declivity, and is divided into quarters by several transverse streets. On the extremity of the isthmus, a building, termed *Dvoretz*, was erected in 1787, for the reception of the Empress; next to which are the admiralty-house, the arsenal, and the dwellings of naval officers. The higher parts are inhabited by citizens, and contain the market-place, as well as the recently built Greek church; beside which, there is another for the divine service of persons belonging to the fleet. The barracks, and hospitals for sailors, together with the magazine, are chiefly on the opposite side of the little harbour; while the barracks of the garrison, being at some distance from the port, at its upper end, are built in the form of a suburb. Beyond the town, near the Artillery-Bay, are the barracks of this military corps, the custom-house, a few other buildings; and, in the vicinity of the adjacent little bay, is the house for performing quarantine. — Lastly, along the shore of the large harbour, we observed a few country-houses, or farms; established by military officers. The whole length of Akhtiar does not amount to one verst and a half; and its breadth nowhere exceeds two hundred fathoms. This measurement, however, does not include the soldiers' barracks, which are erected at the distance of more than four hundred fathoms from the upper boundary of the town; nor those in an opposite direction, appropriated to sailors; nor the hospitals fronting the former, and situated on the shore of the small haven.

The harbour, being the most important part of this town, deserves a particular description; and English navigators generally compare it to that of Malta, or Mahon. Its principal bay, which was formerly called, in the Tartar language, *Kadi-Liman*, and at its upper part, *Avlita*, or *Avlinta*, extends in an almost direct South-eastern line into the country; and is, from the *Severnaya Koffa*, to the efflux of the Brook *Beeyouk-oufehen* into the extremity of the bay, at least six versts in length; being, at its mouth, 600 fathoms broad, but varying, as it spreads farther inward, from 800 to 350, and in some parts only to 300 fathoms. The central depth of this bay, computed from its mouth upwards, in no place exceeds ten or eleven fathoms; and, as far as the former village of *Akhtiar*, the site of which is now occupied by magazines for naval stores, it is no where less than nine fathoms deep; diminishing gradually towards both shores, to three fathoms. There are no rocks or cliffs in the whole harbour, excepting an inconsiderable bank before the *Severnaya Koffa*, which must be avoided by vessels entering the port; but which affords to sailors a most productive fishery. The water in the upper part of this haven, towards *Inkerman*, becomes progressively more shallow; and, near the mouth of this rivulet, it is only from half to a quarter of a fathom deep; so that the long-boats run aground, and must be drawn on shore through the mire. The entrance into the harbour is defended by two strong batteries, erected on the two opposite points of the coast. Besides, there is another battery facing the town, and two similar works are constructed on each neck of land connected with *Sevastopol*; together with a redoubt situated on

higher ground. One of these batteries is built in the form of a semi-circle, and serves, at the same time, to defend the entrance into the Artillery-Bay; which, otherwise, might expose the town to danger. Both the great and small port are completely protected against all winds, by the calcareous beds which progressively rise and extend into the country: occasionally, however, western hurricanes have been observed to penetrate through the mouth of the bay, and to drive the foremost ships from their anchors.

At a distance of about 750 fathoms from the mouth of this bay, the large southerly port, appropriated for the reception of men of war, forms a collateral small arm in a western direction; and which was by the Tartars formerly called *Kartaly-Kosh*, or the Vulture-Bay; but is at present termed the Little Harbour; or *Youshnaya-Bukhta*. Its water extends upwards of two versts and a half into the high country, though only two hundred fathoms wide at the mouth. Immediately towards the South, it forms a small narrow creek, scarcely three hundred fathoms in length, varying in breadth and depth from six to nine fathoms, but gradually diminishing in both respects towards its southern extremity; the whole being surrounded with mariners' dwellings. When the fleet is dismantled, this creek affords perfect security; but, when it is again fitted out, the ships of war cast their anchors in the large harbour, where they are then stationed in a line. The small Artillery-Bay, which is only three hundred fathoms in length, has obtained this appellation from the barracks erected on its shore, for the accommodation of that military corps. It is somewhat nearer to the mouth of the harbour, being separated from the former
small

small haven by an isthmus about two or three hundred broad, and on which the town is situated.

On the same side, at the distance of 900 fathoms from the little harbour, there is a still smaller, narrow creek, two hundred and fifty fathoms in length, and which was formerly called *Avlita*. Here ships of war may be conveniently laid on their side, in order to be calked and refitted. As the external timber of ships is, in two years at the farthest, completely corroded by sea-worms, such repairs frequently become necessary; because these vermin are very numerous along the whole coast of the Crimean Peninsula; especially from this place to Kaffa and Kertsch, and even in the harbour of Akhtiar. No remedy has hitherto been found more effectual for the preservation of ships than that of placing them, at least every second year, on their sides in this small bay, and of charring them with tar and juniper-bushes; an operation which is attended with great danger of setting them on fire, while it materially injures the vessels, by turning them from the keel. In the Sea of Azof, where the water is less saline, and in the Liman near Othakof, these worms generally perish; nay, it has been remarked, that vessels perforated by them, draw more water in the situations last mentioned, but that they become less leaky in the Black Sea. I had now, in company with my friend, Vice-Admiral Priestman, an opportunity of witnessing this hazardous method of charring ships. I observed the marine productions adhering to the bottoms of vessels, and then visited the banks of the small bay, into the extremity of which flows an inconsiderable brook, that irrigates a small tract of low country overgrown with herbs; but the humidity of which is said to be detrimental to the

the

the health of the sailors employed in its vicinity. Among the most remarkable inhabitants of the ocean, which, however, presented no great variety, were the *Alcyonium Schlosseri* *, that here displayed various shades, olive-green, yellowish, and orange, marked with white or yellowish stars; farther, a gelatinous *Ascidia*, some sea-tulips, two species of *Sertularia*, the *Eschara lapidea*, the *Tubularia ovifera* †, which I have formerly described from the Baltic Sea, and the tree-oyster. The shore of the bay throughout consists of beds of lime in a state of efflorescence from the action of nitre, depositing considerable quantities of a saline calcareous powder, and appearing in a manner corroded. In other parts of the valley bordering on this bay, we discovered some neglected vines and wild hops, the traces of former cultivation.

The air of Sevastopol is salubrious, on account of its dry, exposed situation, and the vicinity of the sea. It is not only tempered by winds during the summer, but is also milder in the winter than in many other parts of the Crimea, in consequence of the shelter afforded by the mountains situated towards the North and East. In the former season, the greatest heat never exceeds $26\frac{1}{2}$ degrees of Reaumur's, or 91 degrees of Fahrenheit's thermometer. Land and sea breezes blow alternately in the evenings and mornings, in the direction of this port; thus refreshing the atmosphere, and at the same time facilitating the entrance and departure of ships, while the North-west and North-east winds prevail chiefly at sea, without disturbing the harbour.

* This bastard sponge has been admirably described by Gärtner.— See also Pallas *Spicilegia Zoologica*, Fasc. X. p. 37. Tab. IV. fig. 1—5. *Botryllus stellatus*.

† *Spicileg. Zoolog.* in the same Fasc. Tab. IV. fig. 9.

The supply of provisions from the adjacent villages is very deficient, on account of the apprehensions which the Tartars entertain of the sailors; so that every article is sold at an extravagant price. At present, Russian dealers purchase cattle on the steppe, and drive them to market; but formerly butcher's meat was sold cheaper by mariners, who then enjoyed more liberty, and often resorted to illicit methods of procuring it. Their common slaughtering places were in thickets, on the mountains of Inkerman; whence the meat was conveniently sent to town. This illegal spot was generally known from the large brown vultures hovering around it in circular flights. Rye-meal and fish are the only articles that are here more plentiful, and sold at lower prices than in other parts of the Crimea: the former, on account of the numerous seamen, as well as soldiers, selling their superfluous allowance; and the latter, because the sailors of almost every man-of-war obtain permission from their commander to employ the long boat with oars, for the purpose of taking sea-fish, and selling them in the market. Among these, particularly the *Mugil Cephalus*, the smaller mackarel, or *Pelamys*; then a diminutive species of the red mullet, or *Mullus barbatus*, enter the harbour in considerable shoals. A few years since it was likewise discovered, that this port is frequented by oysters. The œconomy prevailing in the farms established by officers, who encourage the rearing of poultry and hogs, has also contributed to furnish these two articles of consumption. The small quantities of hay made in a few low grounds, and carried thither by the Tartars from the mountains, are so inadequate to the support of the horses and cows kept by the inhabitants of Akhtiar, that frequently during

during long winters, the pood, or 40 lbs. weight, is sold at 30 kopeeks, and sometimes even at one ruble. Timber and fire-wood are alike expensive; and, if a large proportion of these articles were not obtained by clandestine means, they would frequently be in total want of both. Even the Juniper-bush, which formerly covered many parts of the Chersonesus, is now extirpated, and must be brought from a considerable distance above Inkerman, for the purpose of charring ships' bottoms. The Christ's-thorn is the only plant that has hitherto been spared. On the other hand, there is abundance of stone in this vicinity for building; and, since the hewn square stones from the ancient fortress Korffun have been exhausted by employing them in many new edifices at Akhtiar, masons have commenced to saw the soft calcareous rock of Inkerman into regular squares, and to transport them across the harbour to Sevastapol. The batteries of this port are at present in an advanced state of being erected with the same material.

Foreign merchandize and wines, especially those from Greece and Turkey, as well as fruit, may be easily procured from such ships as are obliged either to perform quarantine here, or to resort thither, in order to be refitted. Notwithstanding such advantages, and every degree of encouragement given to the exportation trade, Akhtiar is in this respect a hopeless port; because it is not properly supplied with provisions and other commodities. Since the new regulations have taken place, not only the smuggling of iron, cordage, and other naval stores belonging to the Crown has been suppressed, but likewise the building of small craft has been rendered extremely difficult. On account of its excellent
situation

situation, however, and the security afforded by this port, many vessels, especially during the vernal season, enter the Quarantine-Bay, partly with a design to remain there till the appointed time is expired; partly with a view to dispose of a few articles of merchandize; or, lastly, in order to be repaired. As the port of Balaklava has been shut against foreign ships, such an exclusion of merchantmen from that of Akhtiar might often prove a dangerous measure to the navigation of the Black Sea.

A great inconvenience to this town is the want of good, wholesome water. Although the more wealthy inhabitants may procure this commodity from a well four fathoms deep, and five versts distant from the town, on the road leading to Balaklava; yet the common people, who cannot afford such expences, are compelled to make use of the brackish water yielded by a few springs on the shore; which circumstance, together with the great consumption of salt provisions, probably contributes to produce the scorbutic diseases that prevail here during the winter season. The only good spring in this sea-port town is that situated at the entrance of the small harbour near the barracks occupied by the garrison, but which is exclusively appropriated to the supply of the land-troops. It would, however, be highly expedient to pay some regard to the health of so many thousands, by forming a proper aqueduct. The inhabitants of ancient Chersonesus, doubtless, enjoyed the advantage of such water-works; otherwise the numerous people that, from the vestiges still remaining, must have existed in this country, could not have been preserved from the effects of thirst. Hence the former aqueduct, traces

of which have already been discovered, should be diligently searched for, and restored; because the spring, which a few years since was attempted to be conducted hither from a place called the Eating-house, or Cook-shop, at the distance of six or seven versts, would scarcely furnish sufficient water for this populous town.

Lastly, there is an abuse practised at Akhtiar, which requires an immediate remedy; though the removal of it might be attended with greater difficulty, than that of the inconvenience before stated. The petty dealers in this place, being mostly Greeks, are not contented with moderate profits, but greatly oppress the subaltern naval officers and seamen; not only by the arbitrary and exorbitant rates of their goods, but also by illicit modes of discounting bank-notes and Turkish silver currency. Instances have sometimes occurred, in which sailors have been paid in paper-money that bore a discount of from 10 to 12 *per cent.* when they were obliged to exchange it for copper coin. Farther, Turkish currency, that formerly abounded in the Crimea, was by the same usurers reduced to 15 *per cent.* lower than its usual value; and, besides, the prices of all merchandize were advanced. This unprincipled conduct, which surpasses even that of Jews, has often been carried to such extent, that the mariners have nearly been induced to commit riots and other excesses.

Vign. 3.

ΒΑΛΛΟΜΕ VOV:ΛΤΟΚΑΚΤΡΟ:ΤΙCΧΕΡCΟVΙΑC



The environs of Sevastopol, or Akhtiar, may be considered as truly classic ground; on almost every step of which the inquirer meets with Greek antiquities, that must have been still more numerous, before the town of Akhtiar had risen from the ruins of the ancient Chersonesus. I shall here collectively relate all the observations made at different periods, and during various excursions or journies in this country; but, with respect to its ancient state, I shall be guided by STRABO, who is scrupulously accurate in his VIIth book, where he describes the banks of the Black Sea, and those of the Sea of Azof: it will, however, be useful to premise a physical and geographical account of the South-western quarter of the Crimean peninsula, so that I may distinctly point out the remains of antiquity discoverable on its soil.

The whole angle of the country, which is in a manner intersected on one side by the harbour of Akhtiar, and on the other by that of Balaklava, was formerly called the Heracleotic Chersonesus, because it was peopled by colonists who emigrated from the city of Heracleum in *Asia Minor*; and, as Strabo expresses himself, it actually resembles an extensive promontory* that forms part of the great peninsula. The present calcareous stratifications rise gradually as far as the banks of the Belbek, more abruptly towards the South of this river, and at length terminate precipitately where they unite with the more ancient mountains; thus forming the whole sloping plain of the Heracleotic Chersonesus, that is occasionally diversified with hills, and has a yellow-reddish clayey soil, in many parts mixed with gravel, the surface of which is more or less covered with a dry turf; though, in the higher parts, it often presents a naked rock. This elevated tract assumes a hilly form only towards Inkerman, where the port of Akhtiar commences, from Balaklava to the monastery of St. George. In its farther progress, it forms indeed those lofty and steep rocks contiguous to the sea-shore, which attain their greatest height between the corner of land that has received its name from the monastery before mentioned, and the most distant point, called Fanary; but it again declines toward the northern shore, and in its

* *In littore, præter quod navigatur, meridiem versus expositum est magnum promontorium, continenter porrectum, portio totius peninsula: inque eo sita est urbs Heracleotarum, colonia eorum qui sunt in Ponto, nomine Chersonesus. Strabo e versione XYLANDRI.* And in the progress of this narrative:—*Is (portus Symbolon, namely the harbour of Balaklava) cum alio portu, Ctenuntem appellant, (which must doubtless mean the port of Akhtiar) isthmum constituit, stadiorum quadraginta; is est isthmus, qui parvam peninsulam claudit, quam magnam peninsula partem esse diximus, et in se habere cognominem sibi urbem Cherronesum.*

whole extent there are only inconsiderable flat elevations intersected by hollows ; all of which contract towards the bays on that coast, as well as towards the large and small harbours of Akhtiar. The length of this singular region, from the port of Balaklava to Point Fanary, does not exceed eighteen versts ; and its breadth, between the port of Akhtiar and the southern coast, is computed to be somewhat more than ten versts.

There are, properly speaking, four bays * between the large creek or harbour of Akhtiar and Point Fanary ; each of which might serve as a sea-port. The smallest of these bays, and at the same time the nearest to the harbour of Akhtiar, is that, on the western shore of which is situated the town of *Kherfon*, *Korsoon*, or *Chersonesus* ; a place still called in the Tartar language *Tshortshoon*, but by the Russians *Karantinaya Bukhta*, on account of the quarantine there established. Though very small, crooked, and not completely one verst in length, this creek forms a very safe port for vessels lying at anchor. Buildings have only within these few years been erected for the purpose of attending to the quarantine ; as, previously to that time, the Crown-officers were stationed in tents, and this duty of newly-arrived ships was performed in some recesses or caverns of the calcareous rocks near shore. The second of those bays is considerably larger, extends more than two versts into the country, and is at present termed *Streletzkaya*. Its depth at the entrance is about ten or twelve fathoms ; but it gradually decreases to six, and is in some parts only two fathoms. The third is called

* *Inter urbem (Cherronesum), says STRABO, et promontorium (Parthenium), portus sunt tres.* In this account, he probably does not include the *Round Bay*, which is not sufficiently convenient to serve as a port.

Kroog-Laya Bukhta, or the Round Bay : it is not a full verst in length and breadth ; its depth no where exceeds six fathoms ; and it has in its centre a small island, the anchorage around which is shallow. There are two salt-lakes on its shore : one of these is situated near the obtuse angle of its extremity, being separated from the creek only by a narrow dike ; and the other is on the western side of the bay, from which it is divided by an isthmus somewhat broader than the preceding. Its distance from the *Streletzkaya-Bukhta* is rather less, but from the following *Kafatzkaya-Bukhta*, a little more than a verst ; and the necks of land between both are slightly elevated. The third bay is the *Kafatzkaya-Bukhta*. It forms, towards the sea, together with the fourth bay, which is usually termed *Fanary*, one common sheet of water, and is separated from the latter by an isthmus about 350 fathoms broad. Its greatest depth is from eight to ten fathoms ; though it gradually decreases to five, four, three, and even two fathoms : in the interior parts, it branches out into two points, of which that towards the East nearly describes a right angle. The last bay, *Fanary*, likewise forms two creeks of equal depth, but unequal length ; the western one of which proceeds into the land in a South-western direction, and is much shorter ; its bed being of a snowy whiteness. A flat and narrow isthmus divides its extremity from a salt-lake, which formerly doubtless constituted part of the creek itself, till the violence of the waves in a northern tempest had accumulated this natural bank. The saline lake shews the same white bottom as the adjacent bay ; and appears, during the summer, when I inspected it, to contain less water than the latter ; though it deposited salt at that season,

season, and emitted an offensive smell. It is about 130 fathoms in length; the low dam that separates it being 60 fathoms long, and 23 broad; of which breadth, fourteen fathoms exhibit a flat white strand, that appears, at other seasons, to have been inundated by the water of the lake. A very similar salt-pond, sixty fathoms in length, borders on the North-western level shore of that neck of land which presents the form of a spade, terminating the boundary of the Crimea. This likewise has apparently arisen from a small creek that was probably confined by a bank * nearly sixty fathoms in length, and twenty in breadth; being composed of fragments of stone and mire drifted together by the fury of the waves, and resembling in its constituent parts the strand, which is in a manner defended by a small natural dike: thus it is at present disunited from the open sea, and frequently deposits salt during hot summers. Although the saline matter is of a very inferior quality, being too strongly impregnated with Epsom or Bitter Salt, it is nevertheless speedily carried away and consumed by the Tartars inhabiting the adjacent villages on the mountains; who, by way of tribute for such permission, deliver every tenth load at Akhtiar to the proprietor of this and other saline lakes situated near the Round Bay. Of similar origin appear to be those two salt-pits which are nearly in a dry state, and only 60 fathoms distant from the light-house erected on this point of land. They are likewise separated from the sea only

* Between the stones of this bank, during the month of August, I frequently met with the *Crithmum maritimum*, a remarkable spicy plant, which occurs but rarely on the southern coast of the Crimea.

by the stony mound of the level shore, which is peculiar to this part of the continent.

It deserves to be remarked here, as a natural curiosity occurring on this neck of land, that its western, steep, rocky shore, which in many places (especially at a distance of one verst and a half from the point downwards) rises from thirty to forty feet, and still higher, is not composed of the more recent calcareous strata so often mentioned, nor of the chalky marl forming the mountains of Inkerman; but that it consists simply of a porous or warty calcareous tophus in a concrete state; and which some fanciful travellers have supposed to be a real pumice-stone. It is, indeed, difficult to explain, how such a massy and extensive bed of stalactite could have originated in a country which exhibits no traces of water, essentially requisite to its formation. This singular stratum commences only at the spot where the country of the Chersonesus perceptibly declines toward the point of Fanary-Bay, and proceeds without interruption upwards of two versts and a half along the shore, till the land is covered by the sea; the depth of which varies from one to three fathoms around point Fanary, while the coast has no considerable elevation.

The whole Heracleotic Chersonesus is in a manner covered with the remains of antiquity. On travelling along the southern sea-coast, however, till we arrived at the monastery of St. George, there was no trace of ancient buildings discoverable, nor any other vestige of former habitations; excepting a straight line of ruins, which may be drawn from the harbour of Balaklava due north towards Inkerman. In the vicinity of this line, a long ridge extends across the country in the
direction

direction before stated. There are very few fragments of a wall, and of some turrets, still perceptible; the latter of which had been partly of a round, and partly of a square form; but most of the stones have, on account of their apparently hewn shape, been carried off to Balaklava and the neighbouring village of Kadikoi, for the purpose of erecting buildings. These traces probably indicate the site of that ancient wall, which, according to Strabo*, formerly enclosed the Chersonesus between the ports of Balaklava and Akhtiar, a distance of forty stadia. From the commencement of this line, the whole peninsula abounds with remains of old walls, which appear to have been raised with the view of enclosing fields, or for serving as foundations of very ancient edifices. From such vestiges of antiquity we see the original mode of building that prevailed among the Greeks, who combined prodigious square stones fitted to each other, by means of beams inserted through particular holes made between the former; and the interstices were probably filled up with clay or mortar beaten into them, but which in process of time has been gradually washed away by rain. On taking a view from the height already mentioned, which still exhibits traces of a wall, we could distinctly see the harbours of Balaklava and Akhtiar, together with the adjacent calcareous mountains. The distance between these two ports can scarcely be greater than that stated by Strabo,

* *Cum autem hi (Scythæ) et murum, quo interclusus erat isthmus, ad Ctenuntem aggrederentur, ingestisque calamis fossam implerent; regii, quantum ab his interdium, quasi ponte facto stratum fuerat, noctu incenderunt.* STRABO, Lib. VII. There are, however, no traces discoverable of a former ditch; unless the historian alludes in this passage to a particular fort, then existing contiguously to the wall.

who computes it at forty stadia, or eight Russian versts; which, however, appears to have been greatly exaggerated in the latest maps.

I shall now proceed to describe some of the most remarkable buildings, that are scattered on the narrow part of this peninsula, where it is confined by the two harbours before alluded to; and which I had an opportunity of examining.

Two of the principal edifices occur contiguously to the southern shore. At a short distance from the monastery of St. George (of which I shall presently give a more particular account), and close to the lofty and rugged cape called *Aya-Burun**, or the Sacred Promontory, there is one corner of the shore, on its western side, intersected by two deep but short gulfs, with rocks projecting over the sea; one of which is peculiarly terrific, and separates this angular point from the *Aya-Burun*. Its superficies, which is little more than fifteen fathoms long, and eleven in breadth, is inclosed by a wall seven Paris feet thick, which at first proceeds in a direct line South-south-east to the length of about seven fathoms; then forms an obtuse angle towards the South-east; and, after advancing four fathoms, it reaches the large abyfs where a tower of four arshines square appears to have formerly stood. On the western side, we could discover only the foundation of a sloping wall, five fathoms in length from the right corner of the large wall towards the little gulf; but of the other erections there remain

* The name of this promontory, which consists of a kind of marble, is compounded of the new Greek adjective *Aja*, and the Turkish word *Burun*, denoting a cape. The whole stony mass terminates abruptly within the sea, and borders towards the West on the valley in which the village of *Karani* is situated, and at present inhabited by Greeks.

only a few of the lowermost large square stones in their places. In the inner corner formed by the northern and eastern walls, we met with another edifice thirteen arshines square, the lower stones of which, on the two sides facing the walls, are still visible; but of the two others we could trace only the foundation. On the side due North, broad stones are internally placed along the wall, in the form of steps. No other ruins are evident in the inner space; and several large masses of the impending rocks have lately been precipitated into the smaller abyss. It is, however, difficult to conjecture the design of this building; which, from the want of water, appears to have been unfit for a fortified place. The name of Sacred Promontory, which it still retains, its contiguity to that cape, and its distance from the walls surrounding the city of Chersonesus, all tend to warrant the presumption, that this spot may have been the *Fanum Dæmonis Virginis*; and that Aya-Burun was the *Promontorium Parthenium* mentioned by Strabo*; though others have rather supposed its situation to have been near the rugged corner denominated St. George's Rock, in a more western direction than the present monastery. There is, however, no vestige of buildings, nor are any traces of human workmanship discoverable, on surveying the whole extent between this monastery and the corner, in front of which, the blackish cliff, composed of a brown schistus, projects into the sea; and such is also the case farther along the coast. But, in following the high shore that now extends to the North-west, a steep and

* *In ea urbe (Chersoneso) est templum dæmonis virginis, a qua nomen habet etiam promontorium, quod ante urbem est ad C. stadia, et Parthenium dicitur, fanum ejus genii habens ac simulacrum.* — Strabo, l. c.

pointed craggy rock presents itself, which consists of a dark brown schistus, and proceeds directly into the sea. Towards the continent, this cliff is covered with white calcareous layers; which together with the laminated fossil, decline towards the North-west; the whole being perforated by the waves, not unlike a gateway, so that a boat may pass through it with safety. Behind such thoroughfare, the schistus becomes progressively lower, and is at length lost in the sea. On the shore formed by more recent stratifications of lime-stone, exactly above the divided rock before mentioned, there is an evident foundation of another and more extensive structure; which, in conjunction with the projecting rock, might almost preferably be applied to the passage quoted from Strabo. This building consists of two squares contiguous to the precipice of the shore, forming an irregular front; and its walls are raised in a direction nearly corresponding to the four points of the compass. The more northern erection is an equilateral square of thirty-three feet, situated on an elevated base, in the form of a hill; it appears to have had only one entrance at the South-western-corner towards the sea. Independently of its foundation, this edifice is on all sides provided with a row of prodigiously large oblong stones, hewn by a rude hand. In the middle of the square, though somewhat nearer to the northern wall, there lay a cubical stone, the upper surface of which was on a level with the soil. I caused it to be raised, and found the earth underneath remarkably loose. Around it, I observed several flat stones of a moderate size placed in the ground of an open square, on the northern side; and which had probably served for steps, while an altar, or the

statue of an idol, was perhaps supported by the central stone. The southern square, being somewhat nearer to the sea, and contiguous to the preceding, is an oblong structure, extending towards East and West forty-seven feet, but on the two other sides only thirty-five; and its inner space, on comparing it with the elevation of the square just described, is perceptibly excavated. It appears to have had a door towards the sea at the South-eastern, and another at the North-western corner; the whole fabric consisting likewise of oblong large quadrangular stones, which in the upper row are sometimes placed transversely, though in general arranged lengthwise, according to the direction of the walls. The method of joining them is similar to that practised in all buildings of very ancient date: they are rudely and loosely constructed, without any trace of either mortar or clay; though small fragments of stone occasionally occur, and have evidently served to fill up the interstices between the hewn squares. The stone used for this purpose is the common calcareous rock, which separates in large masses from the horizontal strata, and is mixed with oolites and large pieces of shells. As many other edifices of a like rude workmanship will be mentioned in the sequel, I have been induced to give a minute account of this ancient mode of building. — Near the wall of the oblong square facing the sea, flat hewn stones are laid in a straight line, and they proceed to some distance along the next square, being apparently designed for a path. There is another foundation of stone-work, which commences at about nineteen feet from the South-eastern corner of the small square, extending in a direct line towards the South-east, then describing nearly a right angle, and again turning

turning due South-west ; so that it closely unites with the South-eastern angle of the more oblong square, and thus in a manner forms a front-court. On descending the high shore, we observed here the first vestiges of field-enclosures, which are uniformly composed of fragments of stone. They occur between this place and Akhtiar, nay, almost over the whole Chersonesus ; extending about ten versts in length and breadth. As these remains of antiquity appear in several places, not unlike regular streets, they have sometimes been considered as ruins of walls that formerly served to enclose court-yards.

About one hundred and fifty fathoms from the high shore of this remarkable spot, which has generally been unnoticed by travellers, we met on its borders with another foundation on a singular plan, and the destination of which it is still more difficult to conjecture. There are two parallel rows composed of large free-stone, extending South-east and North-west ; one of which is eleven, and the other thirteen arshines in length. On the upper surface of each stone, that forms the South-eastern extremity of these two rows, there is a round hole, which has apparently served for revolving thick cylinders, or hinges of gates. Between the walls we noticed two very large oblong quadrangular stones in a detached state. At the North-western extremity, and from the right corner of the more extended row, which is somewhat nearer to the sea, another series of large square stones proceeds to the distance of ten arshines. Contiguous to the latter, a circular hole has been made in the soil, and in the layers of stone, through which a person may easily descend ; though it shortly changes into a spacious cavern, whence there is a subterraneous passage from ten to
twelve

twelve paces in length, leading eastward to another open grotto near the precipice of the sea-coast.

At a distance of scarcely one hundred and thirty-three fathoms thence, and not quite bordering on the steep terrace of the shore, we took notice of a quadrilateral structure composed of bulky free-stone, and measuring thirty-seven feet by thirty-two; of which, beside the foundation walls, three rows of stones piled one upon another are still remaining. Two distinct foundations of stone-work, forming an angle of unequal sides, lie parallel to the South-western wall of the square, at the distance of from five to eight fathoms, but no farther continuation of them can be traced. In the vicinity of the North-western wall of the square above alluded to, we perceived two pits encompassed with stone-work, and resembling tombs that had been opened.

About sixty-seven fathoms from this place, the shore forms a precipitate, rocky angle, the lofty top of which is rugged. We travelled hither along a low tract of ground, which conducted us to a steep bushy acclivity, where we could not perceive the craggy precipice till we arrived at its edge. The extreme point presents on its surface a few calcareous flats of this horizontal stratum, whence the prospect over the sea is truly terrific. On the northern declivity of this eminence, the surface of which uniformly exhibits a naked rock, we perceived in some places various circular layers of stone-work, which I suppose to be tombs of the ancient inhabitants of the Chersonesus. They lie beside one another without any apparent order, are from four to five arshines in diameter, and on a level with the ground. Similar relics are discoverable in other
parts

parts of the Crimea, and I observed many in a particular spot, some of which were oval, occasionally an oval and a circular one, or even two of a round form near each other. The rude manner in which the circumference of such stone-work is usually arranged, bears evident marks of their remote antiquity.

On pursuing our journey along the rugged southern shore, which henceforth gradually declines, we observed in the interior parts on the right considerable tracts of ground covered with square enclosures in a ruinous state, and which appear to have been constructed simply of stones without mortar, a mode of building that is still practised in the Crimea. We were obliged to cross several foundations of such walls, especially on approaching Fanary Bay. After descending from this eminence, we followed the road which leads to a farm established by the late Vice-Admiral Alexiano, and situated at the distance of ten versts from the monastery of St. George, in the saline low country bordering on the bay above mentioned.

One of the most remarkable regions, however, of the whole Chersonesus, with regard to its antiquities, presents itself on proceeding from the angle of this bay, and the farm of M. Alexiano, to the extreme point of land termed Fanary*, which extends to the length of two versts and a half, and terminates in a plain surface. The land towards the higher southern coast is so deeply intersected by two creeks proceeding from the main bay, that this little peninsula is, between their extremities, scarcely more than three hundred fathoms in breadth. It expands, however, from the latter spot,

* This isthmus of the Crimea has in some French maps been improperly denominated *Cap Famar*.

so as to become a verst and a half broad at the shore of the bay. The whole soil of this diminutive semi-island has apparently been occupied by a populous city, and indicates, in my opinion, the ancient Cherronesus* of Strabo.

The first object that attracts the attention of a traveller, on entering this little peninsula, is a small isle, which is in a manner connected with the continent by a marshy neck; being situated at the extremity of the longer creek issuing from the bay, and opposite to the farm of Alexiano. I was therefore induced to communicate, in the second vignette, the plan of this fortification, that consisted of bulky free-stones; of which, however, a few of the lowermost only remain in their places; so that I am prevented from giving the exact dimensions. Whether this fortified post was built for protecting the ancient city of Cherronesus, or whether it was one of the forts, which the Scythian leader, SCYLURUS, erected against the Generals of Mithridates †, I shall not attempt to decide. The isle marked *A*, has a dry soil, elevated above the sea; but the neck *B*, by which it joins the land, is low, swampy, and partly

* The situation of this ancient city cannot be more accurately determined than in the words of Strabo. “*Inter urbem (namely the modern Cherronesus) et promontorium (Parthenium) portus sunt tres; sequitur vetusta Chersonesus, nunc diruta, et post hanc portus angusto introitu; — Symbolon dicitur.*” From this passage it is evident that the old city must have stood between the bays of Fanary and Balaklava; the harbour of which was *Symbolon*, a name since changed by the Genoese into *Cembalo*. It is likewise at this distance, we ought to search for the *Promontorium Parthenium*; as the coast in other respects has an uniform appearance.

† *Præter enarrata Cherronesi loca, alia etiam castella sunt, quæ Scylurus et filii ejus extruxerant, iisque adversus Mithridatis legatos belli arcibus usi sunt: Pallakium, Chavum, Neapolis; fuit et Eupatorium a Diophanto conditum.*—STRABO, *loc. cit.* The origin of the name “Balaklava” should, I conceive, be traced in the expression *Pallakium*, rather than in the Tartar word *Balyk*, which signifies *Fish*.

inundated, when the wind blows into the bay. It appears, nevertheless, that this dam, which perhaps is the work of art, has been enclosed and fortified by walls, one of which is still evident; being, on the side next the continent, attached to the square tower C. The strongest fortifications, however, are in the isle itself, which is not only protected by strong walls raised of hewn stones, but also by towers, the foundations of which are still discernible; namely, one near the gate, and three on the eastern side, all of a square form: but there is one in the South-western corner, that has probably supported a round tower; though it is at present a mere heap of ruins. From the same angle, a wall seems to have proceeded into the sea; and, nearly opposite to it, another wall is raised from the shore of the bay up the height on which the city was situated. Near this fortification, on the coast, two sepulchral vaults had been forced open. They were situated beside one another, lined with stones, and only a few arshines in diameter.

The ruins above described, with their squares of stonework, and the scattered buildings of a still larger size, occupy almost the whole soil of this small peninsula. The most distant wall commences at the extremity of the bay, somewhat behind the fortified isle, and passes over the height in a straight line, though obliquely from North to South, till it reaches the coast, at a distance of about 240 fathoms; where it terminates contiguously to a steep, lofty bank, and thus intersects this half-insulated tract. On the side next the isle, the wall appears to have been provided with a gate, and an outwork. It is farther probable, that a tower formerly stood at the distance of forty fathoms from the sea-shore. Not unlike other interior walls, the

the principal divisions of which form squares of different sizes, and frequently of an irregular figure, the wall above alluded to was apparently composed of dry stone-work ; so that both sides were faced with larger stones, and the inner parts were filled up with smaller fragments. Their thickness exceeds two arshines (four feet, eight inches) ; and, had these walls been cemented with clay, that tenacious earth could scarcely have been washed away, especially in those few places still remaining at the height of several feet. Some of the inner squares, but particularly the exterior ones, all of which are in their divisions raised of similar walls, appear to have been empty, and without habitations ; there is, at least, no trace of dwellings discoverable. In other squares, the only vestiges now left, consist of the rubbish of parallel walls erected in straight lines ; being alternately three and four arshines distant from each other, and heaped together of calcareous rock, so as to be nearly two arshines thick at their base. From this arrangement, I am induced to conjecture, that the space between every two opposite walls had formerly been divided into dwelling-rooms, by transverse earthen walls ; and that the larger interstices were designed for streets, or perhaps the reverse. Such supposition is rendered still more probable by the occurrence of an extensive square towards the South end of the city, where the parallel walls terminate ; a circumstance which suggests the idea, that regular streets had led thither in every direction. These walls, which run to a short distance from the outer ones, and those forming the square, generally terminate with a very large flat stone, the breadth of which is equal to their thickness. The empty squares appear to have been common enclosures for cattle, or

to have served for garden-ground ; and the extreme southern corner, on leaving behind the last street or parallel wall, has probably been destined for a cemetery, as there is reason to believe from about ten heaps of stone-rubbish disposed in an almost regular order. In the interior of the town, and at the sea-coast, we noticed the foundations of still larger edifices constructed of hewn stone ; but the greater part of which has been removed. On the hollow ground which extends from the second creek into the country, no vestiges of buildings are discoverable ; and on the extremity of the wide plain opposite the point of the light-house, there are only the walls dividing empty squares. To delineate the whole of these ruins, would have required more leisure than I could spare during my short visit ; nor would such labour have been attended with adequate advantage.

The light-house, erected on the angle of the western extremity, appears to be a modern structure, which is indebted for its origin either to the later inhabitants of the Chersonesus, or to the Genoese. It is built of smoothly hewn stones, closely cemented with calcareous mortar. At the North-west side, where it still projects upwards of seven feet above the wall, there is a handsome roundly arched entrance ; and the inner space is two fathoms and two arshines, or eighteen feet eight inches, English measure, in diameter. On the side next the sea, part of the wall is demolished, probably in consequence of the fragments of rock thrown on shore by the violence of the waves. In order to raise the tower, which is situated on the very edge of the coast, and to render this promontory more visible to navigators, large pieces of white lime-stone have

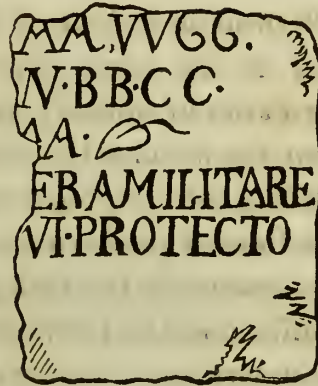
been accumulated, so as to resemble a high cliff. That such tower has been subservient to the purpose of a light-house, is evident from the name of *Fanary*, signifying a lantern or light; and which has been given both to the whole Cape and to the Bay. If the navigation of the Black Sea should become more considerable, it would be useful to erect and support in this place, or rather on a more elevated spot of the adjacent country, another respectable light-house; with a view to prevent shipwrecks during dark nights.

From the farm of Alexiano, which is also called *Novaya Zembla*, in a right line over the bay, the distance to Sevastopol is computed to be twelve versts; about eight to the estate of Admiral Ushakof (lying in a beautiful central valley of the Chersonesus, and being amply provided with spring-water); and ten versts to the monastery of St. George. After measuring the diagonal line from the second creek and the salt-lake to the light-house, I found it to be one thousand fathoms, or two versts in length.

The next object of my description will be the remains of antiquity, occurring as well in the vicinity of Akhtiar, as on the road thence to the monastery of St. George, and to Balaklava. A few others, that are scattered about the middle of the Chersonesus, and whatever may appear to me remarkable in the environs of Kafatzkaya, Kruglaya, and Streletzkaya Bukhta, I shall delay to investigate and describe, till a future opportunity affords me more leisure than I enjoy at present.

In the neighbourhood of Akhtiar, at a distance of scarcely two versts, near the western side of the Quarantine Bay, we beheld the dispersed ruins of the late city of Cherronesus, which flourished

in the time of Strabo. When the Crimea became a Russian province, there still remained the greater part of the wall raised of handsome free-stone, as well as of the fine gate leading to the city, and a considerable portion of the two strong towers, one of which stood contiguous to the bay, and was in a tolerable state of preservation in 1794; but the rise of Akhtiar has completed the ruin of that ancient city. Modern builders, careless about the gigantic plans and noble designs of their ancestors, have removed those handsome square stones from the very foundations, and employed them in erecting new houses; without evincing the least curiosity for drawing a single view, or taking the slightest architectural sketch: at least, I have not been able to procure any information on the subject. I had an opportunity, however, of inspecting one beautiful inscription on white marble, communicated in the fifth plate, and relating to some repairs that had taken place in the fortifications, during the reign of the Emperor Zeno: it is said to have been attached to one of the towers, but is now in the possession of my friend Hablitzl. Another inscription, found in the same place, together with monograms, or characters compounded of several letters, is represented in the third vignette. I also obtained a few other trivial inscriptions at Akhtiar, where a bas-relief of rude workmanship is still preserved in the church; it represents the figure of a man in attire, holding a roller in his hand, and is furnished with an epitaph. From the following Latin, though imperfect, inscription on stone, of which one half only has been found,



it appears to follow, that this place was formerly in the possession of the Genoese.

A Corinthian capital, of greyish-white marble, and fine workmanship, has been rescued from the ruins of the late Cherronesus, and is now preserved by Vice-Admiral Putoshkin. This ornamental piece of architecture is about three feet high, and two feet three inches in diameter; affording a proof that grandeur or luxury prevailed to a greater extent in the late, than in the more ancient city. It is farther asserted, that numerous specimens of sculptured marble, which was probably obtained from the White Sea, have formerly been dug out of these ruins. Copper and silver medals, but more rarely of gold, coined in the reigns of Gordian, Aurelian, Constantius, nay, even in that of Augustus, are found here; and those of copper, with the impression of an anchor, are very common. Fragments of white and blue enamel of different shades, as also of common glass, are discovered in this place; but they have become so completely laminated by the effects of time, as to present

sent all the colours of the rainbow. Many remarkable objects might doubtless be still brought to light, if diligent search were made within the wall of the town, especially in the large heap of ruins forming a kind of mount; and, if particular care were taken to prevent the articles thus obtained from being suppressed, or from falling into improper hands. A beautiful silver medal, in a fine state of preservation, was found among these ruins, and is delineated in the fifth plate; but, as I am no antiquarian connoisseur, and as I write at a distance from all literary aid, I was undetermined whether it deserved to be copied; though it is, in my opinion, nobly executed.

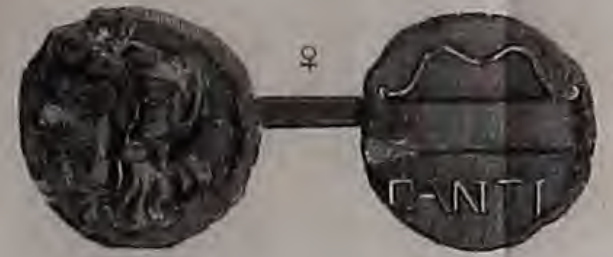
The whole superficies of the city, including the calcareous rocky shore, which is here somewhat elevated, and terminates abruptly, is from seventy to eighty thousand square fathoms within the precincts of its wall, that describes several angles intended for its defence. The ancient plan of the streets or houses can, however, be no longer distinguished; because every spot has, by frequently digging and forcibly breaking out the hewn square stones, been thrown into confusion, and covered with rubbish. Considering the extraordinary population that must have formerly been in this place, the circumference of the town was apparently too confined to contain such numbers: it is therefore probable, that a large proportion of the inhabitants dwelt on their distributed lots of ground, and carried on their respective trades, or occupations, beyond the limits of the town. In its vicinity, there still remain several caverns in the terraces of the calcareous mountain, and which have perhaps served as lodgings for the crews of ships that frequented this once magnificent city.

That



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PL 5



That the late Cherronefus was furnished with water by means of aqueducts, is evident from the ruins of an octagonal building situated at the distance of nearly a verst. In one corner of this structure is an aperture, through which a person may descend to the depth of about five arshines; where a narrow passage, extending to fifteen fathoms in an eastern direction, leads to a kind of well several feet deep, whence pure water rises, overflows into the entrance, and afterwards disappears. Behind this spring two other passages are discoverable, one of which is completely filled up, but the other proceeds to some distance. All these circumstances indicate, that such ruins belong to a former subterraneous aqueduct.

The numerous walls occupying the greatest part of the Cherronefus are now altogether in ruins. They had served to enclose large squares or oblong fields; sometimes forming streets, and, in some places, several rows of small partitions, that are of similar dimensions with those above stated, so as to represent the former establishment of colonial villages. Beside these walls, the fragments of which are in a manner purposely scattered over the whole soil, we observed in every direction the vestiges of single buildings constructed with large free-stones; and which had probably been towers intended to protect and to afford an asylum to the inhabitants, when exposed to the incursions of the Tauro-Scythians. Such erections are most numerous in the lower vicinity of the city; between the road to Balaklava and the beautiful vallies watered by springs, where the farms of Admirals Putoshkin and Ushakof are situated. I counted thirteen, at the least, within the extent of

four versts North and South, and two versts East and West, between the Eating-house, as it is termed, and the farm belonging to M. Ufhakof. Several others may be seen at a less distance from each other, within the compass of about a verst and a half square, in the environs of the fountain which lies to the South of the road leading to Balaklava. Most of them are quadrangular, from twelve to fifteen arshines square, and sometimes two of the sides are shorter. They have not uniformly an entrance on one side. In the greater number of these ruins, there is only one row of those bulky square blocks remaining, of which they were erected, and which are frequently two arshines in breadth and thickness. In a few, however, we met with two or even three such rows of stones, one piled upon another: many of them are contiguous to the squares of field-walls so often mentioned; or, in other places, the rubbish of such stone-work extends to some distance into the open country. Immediately above the farm of Putofhikin, I remarked on an eminence the regular foundation of a square, occupying twelve arshines, and constructed of large free-stones, with an entrance towards the West: it is enclosed within the basis of a lower wall, two sides of which are thirty, and the other two thirty-two arshines in length; so that the small square is not exactly disposed in its centre. Near these ruins, and towards the border of the adjacent low country, there appears an edifice consisting of two oblong squares adjoining each other; and on one side of which I still noticed four rows of free-stone in progressive order. Not far from this place, I met with another oblong square measuring ten arshines by thirteen, also

erected with free-stones of a prodigious size, and having an entrance at the South side; on the declivity of which we likewise observed mural enclosures. Between the farm of Putoshkin, or rather of its present possessor Tzukharin, and that of Ushakof, I found on a rising ground an old regular quarry, whence the square blocks composing such fortifications have evidently been obtained. Some of these stones were not totally detached, while others remained in a finished state. Many similar foundations occur on both sides of the eminence, and also in the valley where the beautiful farm of Ushakof is situated, at the distance of about nine versts from Akhtiar, and somewhat more than a verst and a half from the monastery of St. George: Exactly opposite to this farm, my attention was attracted by the basis of a more extensive building, on an eminence forming the southern side of the valley, and very near the road that leads from Akhtiar to the monastery before mentioned. Various other foundations are discoverable here, among which one towards the South is forty arshines square, having two ditches filled up with stones, not unlike wells in a ruinous condition; and in the centre of this fabric, I perceived a small square. Another quadrangular stone-work, fifteen arshines in extent, is connected on the North-eastern side with the larger one by an oblong square six paces wide, and which is open towards the North-west. Both are raised with very bulky free-stones, of which three rows are still extant on some parts of the work. From the South-western corner, a wall is drawn for about eighty paces toward the North-west, whence it proceeds in a northern direction, forming an obtuse angle near a small square of fourteen arshines constructed of free-stones, which are four-

teen spans or upwards * in thickness, and seven in breadth. With this structure it is connected by a transverse wall; and, after passing by several other vestiges of buildings, it at length terminates towards the valley, at the distance of about two hundred paces. As this vale constitutes the most beautiful and fertile region of the whole Chersonesus, it is by no means surprizing that such a district was defended by numerous fortifications.

About three, or three versts and a half from the new town of Korffun, we again met with elevations, on which many circular rows of stones were arranged contiguous to each other; and which resembled those I have already conjectured to be tombs of the Chersonites; but they are still more numerous in the environs of the valley extending towards the bay of Streletz-kaya. The internal structure of these sepulchres deserves to be examined by the spade; but I had no favourable opportunities during my residence in this country, and found myself destitute of the assistance required for such purpose.

It now remains only to mention the plants, which at different seasons of the year I observed to be indigenous in the Crimea. Among the trees and shrubs are, the Dwarf White Beech; the Dwarf Elm; the Grey Oak or *Cerris*; the *Juniperus Phœnicia*, *Pyrus nivalis*, *Prunus spinosa*, *Paliurus*, *Rosa*

* The accuracy of this vague mode of calculating appears to be very doubtful: for, if each *span* be computed at nine inches, those marvellous hewn stones must have measured ten feet six inches, by five feet three inches; a size of which there occurs no instance in ancient or modern architecture. On the whole, it should be remarked that, from the author's perplexed and distorted style, it is in many instances almost impossible to form a correct idea of the objects described, or to translate his text into plain language.

spinosissima and *pumila*, *Jasminum fruticans*; then the *Peganium Harmala*, *Zygophyllum fabago*, and the *Ruta officinalis*, all of which delight in the rubbish of old buildings; farther, the *Ruta linifolia*, *Euphorbia myrsinites minor*, and some other species of the Spurge; the *Statice trigona*, *Lychnis dioica* and *Conoidea*, *Linum narbonense*, *hirsutum*, *strictissimum*, *flavum*, and *serotinum*; several species of the *Medicago*, the *Serpyllum citri odore*, *Sideritis Syriaca*, and *montana*, *Iris pumila*, *Asphodelus luteus*, *Ornithogalum monile*, *Allium arenarium*, and the *Scilla autumnalis*.



A remarkable specimen of antiquity, though of later construction, is the old fortrefs of Inkerman, erected at the extreme point of the harbour of Akhtiar, together with the neighbouring caverns, which I propose to describe, on account of their contiguous situation. I shall not attempt to decide, whether it was a place of defence at that early period, when the Chersonesus

Chersonesus was inhabited by Greeks ; or whether it must be considered, according to FORMALEONI*, as the *Ctenus* of the ancients ; or, lastly, as appears to me more probable, whether it be the work of the Genoese. The caverns, however, are obviously of more ancient date, and have, in my opinion, been excavated by monks, during the reigns of the Emperors in the middle or later ages. As, according to the Byzantine historians, the inhabitants of the Chersonesus were Arians ; and, as that numerous sect dispersed throughout the East was afterwards severely persecuted in the Greek empire, it may be rationally supposed that many monks, and persons attached to their religious tenets, fled to Korffun. Unable to procure an asylum in this city, they began to form cells, and to construct chapels, in the soft calcareous rock, both here and in many parts of Crim-Tartary ; where they peaceably followed a monastic life, adhering to the principles of their sect, possibly with the hope of converting the savage inhabitants. Similar cells or dwellings, formed within rocks, occur in a terrace of the calcareous mountain to the North-north-west of the village of Karani, near Balaklava ; farther, in the rocks situated in my own manorial district of Karakoba, and below Mankup, beyond the village of Shülü, which is also my property ; and, lastly, at Tepe-Kermen, and Kis-Kermen † in the vicinity of Shürü, on the banks of the Katsha, near the Jews' fortress Dshufut Kalé ;

* *Histoire philosophique et politique du Commerce, de la Navigation, et des Colonies des Anciens dans la Mer Noire. Venise, 1789, 8vo. Tom. II. p. 263.*

† *Kis-Kermen* signifies the fort of virgins ; which, according to tradition, was inhabited by maiden ladies, who at length precipitated themselves from the rock. They were probably nuns.

as well as in several other places, where the soft calcareous rock was easily worked by the chisel. We have, indeed, a modern specimen of such architectural sculpture in Russia, and which is performed by Greek monks in the wealthy convent of Svatogorskoi, at a short distance from Tor, and Isum. This monastery has been dug to the length of fifty fathoms, or three hundred and fifty English feet, into a high chalky mountain, overgrown with wood, on the banks of the Donetz. There are several natural spires, two of which in particular resemble artificial turrets erected above the church, though consisting entirely of soft chalk.

In-Kerman, or literally the Town of Caverns, has received its name from the cells excavated within the rock. The calcareous ridge, above alluded to, extends to the port of Akhtiar; approaches a similar mountain, situated on the opposite side, at the distance of scarcely one verst and a half from the mouth of the rivulet Beeyouk-oufchen, which empties itself into that harbour: thus it contracts the valley consisting of rich meadows; and here ends in steep rocks. The mountainous ridge terminates, towards the right side of the small river, in two projecting angles forming straight rocky walls; the first of which exhibits evident stratifications: in the most remote corner there are numerous cells disposed in several rows one above another. A view of this situation has been taken from the South side, and the reader will find it distinctly represented in the sixth plate.— A prodigious mass of rock (being of a size at least equal to that employed for the pedestal supporting the statue of Peter the Great at St. Petersburg), which contained a few demolished cells, had tumbled down in the winter of 1793-94, and lay on
the

the lower road when I first visited that place ; but the sailors have since divided this mass by the saw, and carried off the squares for the use of buildings. On the second projecting corner, a fort has been erected. This rock is likewise on its South side so completely excavated, that its open cells, which, like stories of a house, are divided into rows, resemble at a distance in some directions the form of bee-hives ; and the walls, or spaces intervening between these cells, are frequently less than a span in thickness. On the South-west is the church, considerably above ground ; beside which, there are a few scattered caverns, and two flights of steps leading to the former. Here the rock forms a precipice as smooth as a wall ; projecting, however, at one corner in a terrific manner, so as to represent the segment of a Gothic arch. It is hollowed at its base, probably by the effects of water, and has considerable empty spaces or grottos. The whole appears to be almost a solid rock, without particular strata, being divided only by a few horizontal veins, and consisting throughout of small shells, of similar fragments, and diminutive smooth entalites.

The church, of which an internal view is delineated in the fourth vignette, has been formed out of a single piece of this rock. On both sides of the altar erected in a niche, there is a choir formed of the same rock ; and we likewise on each side observed a sarcophagus of similar workmanship deposited on the floor. In the latter, we understood, have been found the bones of persons who were probably revered for their sanctity ; of which, however, no vestiges can be discovered. The length of the chapel is about three fathoms and a half, or twenty-four feet six inches ; and its height, one
fathom

fathom and three quarters, or twelve feet three inches. — Similar sarcophagi, of coarse workmanship, are frequently found contiguous to one of the walls, within the cells that communicate with each other, and also with the upper rows. But, in every direction, the cells and stairs are beginning rapidly to decay; and many of the latter have already become inaccessible, in consequence of large masses having been disengaged from the rock. There is a stair-case that leads from the church upwards to the level ground occupied by the fort; of which a strong wall, extending transversely over the steep corner of the rock, together with some towers in a very ruinous state, and a deep fosse, are still extant; though the corrosive effects of time are evident, both in all the masonry-work, and in the caverns of the rock.

On departing from this place, we met with a paved, though execrable road; and crossed, in an oblique direction, a dale about thirty fathoms broad, and a brook, by a very decayed stone-bridge of three arches; beside which, there is another of one arch, constructed over a collateral arm of the same rivulet, but likewise much impaired. Both structures are apparently of great antiquity. Towards the West of this brook, the mountain adjoining the left side of its mouth, forms a long rocky wall with a projecting angle, which again proceeds with a similar elevation towards the bay, where it gradually declines. At the corner, we observed some grottos in the rock, and a passage that leads by transverse steps to the upper parts; in ascending which we passed three grottos open from without, and some others towards the left, hewn within the hill. This entrance conducts to a chapel, which is cut out and supported
by

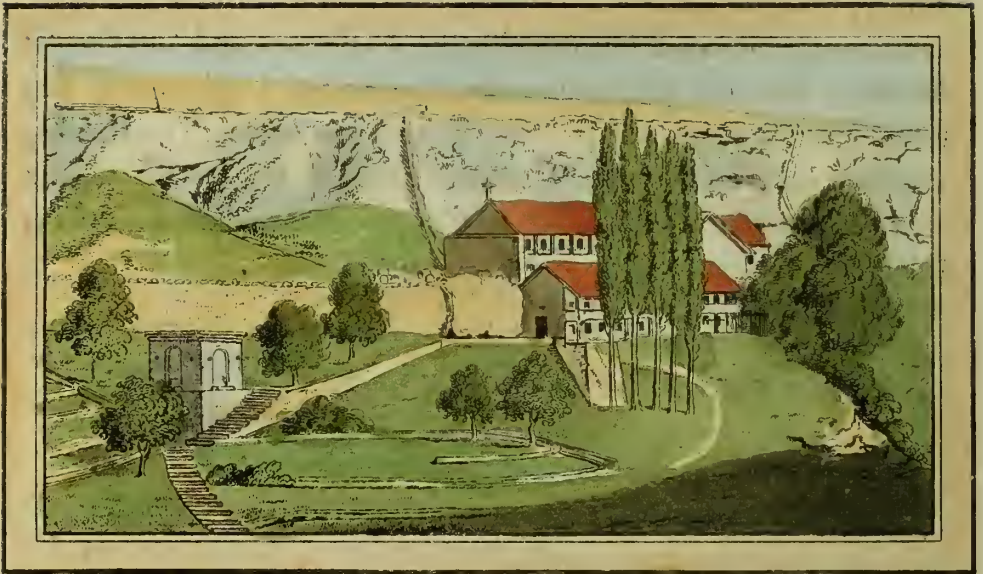
by several arches of the same material ; but the falling of the rock has destroyed part of its exterior wall. Beside the chapel, which is situated exactly at the corner, there begins another convenient passage, likewise excavated in the rock. It extends upwards of one hundred paces along the declivity towards the bay, and has only two openings for the admission of light. Where this walk terminates, and whether any grottos may be connected with it, cannot be ascertained ; for it is at present, like most of the grottos, employed as a gun-powder magazine ; and is consequently both locked up, and guarded. Notwithstanding the exhalations arising from the salt-marshes in the neighbourhood, the powder deposited in these cellars is not only preserved in a dry state, but it has also been observed to acquire an additional degree of strength, if it be suffered to remain there for a considerable time. — About five hundred paces from the corner, up the rivulet before mentioned, several well-executed grottos appear beneath the rocky bank, which extends to nearly one hundred paces in length. Some of these have likewise been converted into powder-vaults : and at the farther distance of one hundred paces, namely between the steep mountain and the rivulet, which is here frequently a fathom and a half in depth, we could trace the vestiges of a wall that is again continued on the opposite bank as far as the mountains : and on this side it appears to have been furnished with a gate.

After crossing the mouth of the rivulet Beeyouk-oufshen, in a boat to Akhtiar, the calcareous mountains of Inkerman, particularly on the right of this port, imperceptibly diminish ; and at length form a level surface towards the Severnaya-Koffa, or

the north-point of the harbour's mouth. Several caverns again occur in the rocky bank, on the left, at some distance from the mouth of the rivulet; and, on an inaccessible part of the same high bank, there is an extensive cavity, probably designed for a chapel, with some contiguous grottos. Somewhat farther, though still on the sea-coast, and nearly on a level with the water, we noticed a square rock, which is apparently cut out of a larger mass, being excavated within, and having a respectable entrance: it has several holes for the admission of light, and is now likewise used as a magazine for preserving gun-powder.

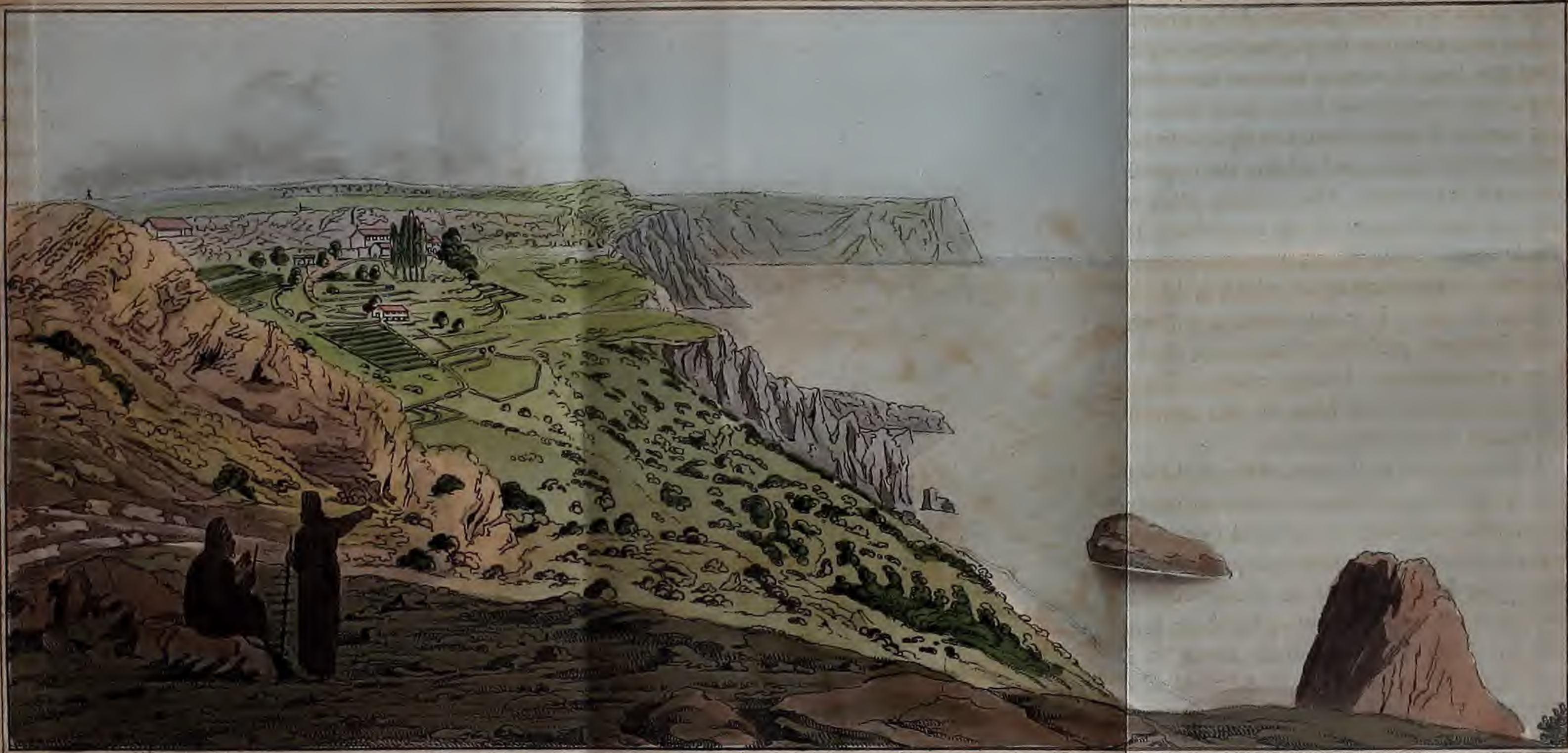
It is inconceivable, how a multitude of monks could exist in the valley near Inkerman, which is extremely prejudicial to health; especially when it is considered that persons, sent hither for a short time, in order to make hay or to tend cattle, during the summer, cannot escape malignant agues; nay, that others, from a transient visit to this place, have become indisposed, by once respiring the pernicious morning or evening air. It is even asserted, that such pestilential vapours generate diseases in the town of Akhtiar, when the wind proceeds from the bay. Other effects, indeed, cannot be expected from those extensive marshes, that environ the mouth of the rivulet as well as the extremity of the gulf, both of which are frequently inundated by the sea. This low region, however, is productive of such curious plants as are rarely found in any other part of the Crimea. During the spring and summer, I met with copious specimens of the *Salicornia*, *Statice Limonium*, *Salsola Soda*, *fativa*, and *altissima*, *Chenopodium maritimum*, and other marine vegetables; farther, in abundance, the small celery,

celery, and the *Leucojum vernum*, commonly with four flowers. On a more elevated soil flourish the *Elaterium* and the *Ononis inermis*; but, on the calcareous mountains, I discovered the rarest species which are peculiar to this peninsula. The shrubs, growing on the low tract above alluded to, consist of the *Prunus spinosa*, *Pyracantha*, *Pyrus orientalis*, *Rubus sanctus*, *Clematis Vitalba*, native vines, and rose-bushes.



The last object worthy of notice, during the journey hitherto performed through the Heracleotic Chersonesus, is the Greek monastery of Saint George, called *Georgiefskoi-Monastyr*. When I first visited Akhtiar, I crossed the country in a diagonal line, and proceeded directly to this convent, after passing the farm of Ushakof. The spring had unfolded its earliest flowers, among the first of which was a small *Ornithogalum*, greatly resembling the *luteum*: its root consisted of a series of small round bulbs, transversely attached to each other. The last of these globular bodies regularly flowers, and produces a new one from its own substance for the succeeding year; while the others in the row present only empty husks.

The monastery of St. George is situated in a slight excavation of the southern, rocky, and very high shore of the Chersonesus;



sonesus; between the terrific promontory of Aya-Burun, already described, and the prominent corner of a rock called *Georgiefskoi Muis*, or Cape George. From the uppermost, and uniformly rocky terrace of this prominence, the shore declines with alternate steep elevations to the level of the sea; so that the highest narrow terraces have been adapted to dwellings, and those in the lower parts have been converted into vineyards. Various trees, and especially the black juniper-tree, or *Juniperus Lycia*, resembling the cypress, occasionally grow between the rocks. The seventh plate will afford a distinct view of the situation of the monastery, the gardens, and the whole coast, being drawn from the summit of its projecting corner; in the vicinity of which a blackish rock is situated within the sea. It is, however, a difficult task to delineate, with sufficient perspective accuracy, such views as are taken from an eminence; but the reader will at least be enabled to form an idea of the plan of this convent, which is farther illustrated in the fifth vignette.

We descended to the monastery at the intersected part of the shore, between calcareous stones resembling oolites; though, on examination, they were found to consist entirely of minute, incrusted snails, not unlike grains of millet. In some places, large free-stones, similar to those employed in the ancient structures of the Chersonesus, had been broken from the rock; and the same species of fossil seems to have served for the buildings in the vicinity of Admiral Ushakof's farm. An antique column, composed of lime-stone without any capital, is shewn to travellers; but it is executed in very accurate proportions. It is said to have been discovered beyond the convent,

when part of the rocks was precipitated on the shore. This pillar is three arshines and a half, or eight feet two inches high, and its greatest diameter is thirteen inches; being somewhat thicker in the middle, and apparently of great antiquity. Hence some persons have been induced to conjecture, that the *Fanum dæmonis virginis* may have been situated here, beyond the convent, though no vestige of it is observable on the ground between the building near Aya-Burun before described, and the rocky point opposite the black cliff. The real situation has been so disfigured by the gradual falling down of rocks, as to be ascertained with difficulty. Even at this moment, the rocks supporting the upper terrace impend so remarkably over the church and convent, that the slightest earthquake would occasion their downfall. Beneath these precipices occur several grottos, some of which are inhabited by monks, while others are employed as poultry-houses. In their vicinity, I noticed those beautiful fig-trees which resisted the severe winters of 1798 and 1799, though similar trees were then killed in some of the vallies. The situation of this convent, however, is uncommonly warm, being directly exposed to the meridian sun, and secured from all cold winds; but, during the prevalence of tempests from the South and South-west, it presents terrific scenes. The monastery consists of a small church, a spacious refectory connected with it by covered passages, and of some tolerable apartments, which are inhabited by a few Greek monks. There also resided here a suffragan; and the place is celebrated for the parties of pleasure, and the pilgrimages that are undertaken on St. George's day, in the month of April, principally by the Greek families throughout the Crimea.

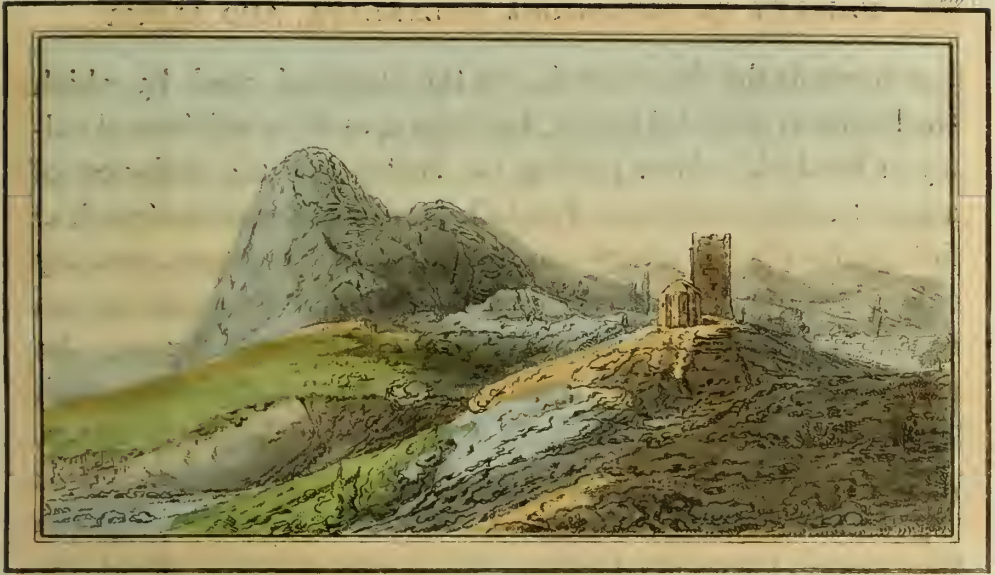
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These excursions are particularly gratifying to females. Immediately below the convent, a spring of excellent cold water issues from the rock ; it is well enclosed, and serves to irrigate the vineyards cultivated on the lower terrace. On the rocky wall, the *Elatarium*, and other plants, which delight in warm situations, grow in abundance. Botanical pursuits, however, are attended with difficulty ; and, after descending this winding path to the sea-shore, even persons provided with the best lungs will, without resting, be scarcely able to climb up as far as the convent.

On the shore, near this monastery, three different species of rock may at one view be distinguished : thus an idea may be formed respecting the orography of Crim-Tartary. Uppermost, appears the latest bed of lime-stone, which is copiously mixed with testaceous fragments and oolites, the whole surface being covered with thick strata : below the convent lies a still more ancient calcareous stone, or more properly a rock approaching to marble, and forming solid masses without regular gradations ; but the fissures are interspersed with vitriolated martial ochre : and this fossil also presents itself on the surface of the Sacred Promontory, termed *Aya-Burun*, as well as in the more distant mountains towards Balaklava ; while the modern calcareous bed terminates here. Lastly, near the sea, and especially at the eastern corner of the rock, which forms the bay of the convent, there occurs a dark grey and often brownish argillaceous schistus, coarsely laminated, and in which both pebbles and octahedral marcasites are occasionally discovered. The red jasper, obtained in fragments on the declivity of the rock, is somewhat veined with chalcedony, and appears to originate from a vein or cleft ;

as some of the latter are filled with a red bole and vitriolic earth. Among the different springs issuing from the steep shore, there is one impregnated with iron.

Since my first visit to this monastery, when there stood only a wooden cross on the lofty coast, and the traveller was agreeably surprized with the sudden prospect that appeared before him on the way leading to the convent, a chapel has been erected to the memory of a Greek, who is there interred. General, now Count, Kachoffky, has also caused a large quantity of prodigious free-stones, taken from the ruins of the ancient Chersonesus, to be conveyed hither, with a view to erect a similar chapel to the memory of his consort, who is likewise buried in this place; but the Count has not carried his design into execution.



*Journey to Tshorguna, Balaklava, and along the South-western
Coast of the Crimea.*

MY first excursion to Akhtiar, and into the Chersonesus greatly increased my desire of exploring Crim-Tartary. Immediately after my return, I availed myself of the vernal season; and without hesitation accompanied my friend HABLITZL to his estate of Tshorguna; in order to continue my farther journey into the mountains, directing my course along the southern coast of the Crimea.

On Easter Sunday, I departed with my consort and daughter, whose curiosity of viewing some beautiful tracts of this peninsula had likewise been excited. I have already described my journey to the banks of the Belbek: but we here quitted the western post-road leading to Akhtiar, and proceeded in a direct

line towards the South-west, on the imperial road by which the Empress visited Akhtiar, Balaklava, and the celebrated valley of Baidari. After passing the Belbek, at the distance of about twelve versts from Bakhtshifarai, we began to ascend, at first gradually, but afterwards over steeper eminences, the lofty calcareous mountain already mentioned, and the continuation of which I shall more particularly describe in the sequel. Its soil in these regions is well covered with trees, especially with the *Carpinus minor*, or Dwarf Yoke-Elm, bearing small leaves, and being the most common production of the Crimea. This tree is interspersed with the *Paliurus*, with Sloe-trees, the *Cornus mas*, *Viburnum Lantana*, the shoots of which afford the tubes for tobacco-pipes that are in great request; with the *Oxycedrus*, *Ligustrum*; and, in a few places, with the *Cercis*, or Judas-tree. On the northern side, the large-flowered *Primula uniflora* was now in blossom, and uncommonly abundant; bearing in general white, less frequently pale yellow, and more rarely pale violet flowers. The *Dentaria pentaphyllos*, *Veronica Teucrium*, and *Euphorbia sylvestris*, were beginning to blow; but the *Scilla hyacinthioides* had already flowered. The beautiful Crimean Wood-Piony, or *Pæonia triternata*, was in full vigour. Abundance of sage, and of the *Seseli dichotomum*, was conspicuous on the South side of the dry chalky mountain. Previously to our arrival at the summit, we observed on the left, at the distance of about three quarters of a verst from our road, the tower of an ancient fort, called by the Tartars Tsherkefs-Kermen, or the Circassian Fortrefs, and which has given its name to a village formerly inhabited by many Greek families, but at present exclusively by Tartars. The most remarkable
 object

object in the vicinity of this ruinous castle, is a deep fountain, with steps hewn in the rock, but which cannot be descended without danger. It is situated at the distance of several hundred fathoms from the fort.

On the summit of the mountain, Admiral Mackenzie, late Commander of the Fleet at Akhtiar, established a farm; for the erection of which, a considerable portion of the woods was granted to him, but subsequently repurchased by the Crown for the supply of the navy. Since that period, the hill has, among the Russians, retained the name of Mackenzie. This part of the calcareous ridge is, by the Tartars, called Kok-Agatsh, on account of the numerous white beech-trees growing on its soil. The road, on descending from the eminence, is so exceedingly steep, that notwithstanding many windings and great exertions it becomes necessary to chain the wheels.

On arriving at the lower part of this craggy ridge, an extensive tract, diversified with level grounds and gentle elevations, presented itself to our view. The whole is eight versts in breadth towards the mountains of Balaklava, and becomes still broader in the direction of Akhtiar and the Chersonesus. On a gentle elevation of this tract, to the left of our road, we observed the pits from which is obtained the Keffe-Kil, thus called by the natives; a substance consisting of an excellent grey saponaceous clay, or a species of Fuller's-earth. The whole eminence scarcely rises from fifteen to eighteen fathoms above the level of the valley, and is in a manner burrowed by the Tartars. Its surface is overspread with oaks, white beech, cornel-trees, and Christ's thorns. The miners are obliged to dig pits in the form of an inverted cone, to the depth of from
eight

eight to twelve fathoms, before they can penetrate through the incumbent brittle chalky marl to the bed of clay, on which they generally meet with water. The latter stratum is about twenty-eight inches in thickness; has underneath an uncommonly tough crust, of a colour resembling that of the clay itself; and, beneath it, there is again a white cretaceous marl. Old pits, originally made in quest of such saponaceous clay, are still discernible at the edge of this eminence; and it is probable that the Fuller's-earth, in some parts, appeared on the surface; as otherwise it could not possibly have been discovered without some extraordinary chance, or fortuitous event. The Tartars, who are usually hired during the winter for this purpose, work without any scaffold, and are exposed to great danger by digging at first vertically, but afterwards in an horizontal direction, to the depth of several fathoms, as far as the nature of the mountain will permit. The upper strata are secured from falling down, simply by supporting them with posts; and thus the miners break out the clay by placing themselves sideways within the pit. The person who farms the mountain, allows the workmen two-fifths of the whole produce for their labour; and, when they have penetrated to a sufficient depth, and emptied one of the mines, it is again abandoned and speedily filled by the pieces of marl detached in consequence of such excavation. Great quantities of this clay, which is known under the name of Keffe-Kil, or earth of Kaffa, were formerly exported to Constantinople, where it was used in the baths by women for washing their hair. It is dug out partly here, and partly at the distance of sixteen versts from Akmetshet, near the rivulet Sabla; though it has also

been discovered, in a valley near Karaffubasar, below the steep cretaceous mountain of Akkaya. At present, however, only a small quantity of it, or about one hundred poods annually, is exported; because, during the late war, when the commercial intercourse with the Turks was interrupted, so that they could not be supplied with this article, researches were made in Anatolia, where an earth was discovered, which is in every respect similar to that formerly obtained from the Crimea, and which now serves as a substitute at Constantinople. Its consumption in Crim-Tartary itself is inconsiderable; though the pood is sold at all the markets for the low price of twenty kopeeks. The woollen-cloth manufactory established in the town of Novorossieisk, formerly Ekaterinoslav, could employ such mineral with great advantage; as in colour and quality it is not inferior to English Fuller's earth, excepting that it is occasionally mingled with a small proportion of lime, and sometimes also contains diminutive kidney-shaped and globular pyrites.

At the distance of six versts from Muilnaya Gora, or the Soap-hill, we arrived at the village of Tshorguna or Karlofka; though in general it is by the Russians called Tshernaya Derevna. It lies on the left of the road leading to Balaklava; in an adjoining and gradually contracting valley, from which the rivulet Beyouk-Ousehen, or Kasikly-Ousehen, openly discharges itself into the bay of Akhtiar. In this village, belonging to my friend Hablitzl, we passed the Easter holidays, under his friendly roof. Notwithstanding the vicinity of dry rocky mountains; its situation is highly romantic; together with the ancient tower that may be seen from the Balaklava road, and

which greatly improves the landscape : I have therefore caused a drawing of this charming prospect to be taken from one of the terraces situated North-west of the entrance into the valley, and which is represented on the eighth plate. In an orographical respect also, Tshorguna deserves every attention; because the different species of Tauridan mountains here separate. Lastly, the agreeable days I have enjoyed at this hospitable place, will never be obliterated from my memory; as it has repeatedly afforded me an asylum for repose after my excursion to the western mountains of the Crimea, and also served as the point of re-union with my relations.

In the village itself, which is divided into two parts, the rivulet Beyouk-Ousehen, or the large brook proceeding from the valley of Baidari, receives on its right bank the collateral brook Ai-thodor*, that flows through another dale, in an eastern direction, along the calcareous ridge often mentioned; and, a few versts higher from this place, it also unites on its left bank with the rivulet Bargana. Like all the rivers and brooks of Crim-Tartary which flow from mountainous parts, it is sometimes a rapid stream, and sometimes nearly dry; so that it has not sufficient water to turn a mill erected in this place. Even the small brook Ai-thodor, which in its higher parts, about two versts from Tshorguna, intersects a valley and orchards that are my property, and affords a scanty irrigation, has been observed to swell very suddenly after tempestuous showers, and to become so formidable that no person would

* The syllable *Ai* or *Aja*, which frequently occurs in the names of places derived from the Greek, is the *Hagios* of that ancient language; consequently, Ai-thodor signifies St. Theodore.



venture to pass it. Nevertheless, the Beeyouk-Ousehen can be ranked only among the Crimean streams of the second class.

The lofty octagonal tower of Thorguna is erected of maffy free-stones. It was, according to tradition, built by one of the Turkish Bashaws residing here, and was originally designed for the protection of the villages, situated in its vicinity, from the depredations of banditti. I am, however, induced to believe, that this structure is the work either of the later inhabitants of Korffun, or of the Genoese, and has probably served for maintaining the communication between Balaklava and Fort Mankup; the former lying at the distance of six, and the latter at that of ten versts, being on the upper banks of the brook Ai-thodor. The tower before alluded to is so remarkably strong, that the frequent discharges of small cannon placed upon its platform, have not in the least degree affected its solidity.

Beside this tower, we noticed the house formerly occupied by the Turkish Bashaw. It is on all sides provided with a gallery; and, though the whole building is slightly constructed of timber, yet it still forms a very solid fabric. The present possessor has embellished it with an orchard and flower-garden, in the European taste; and, at a little distance in the valley, he has planted a considerable orchard. Another small, but elegant brick dwelling, erected in this neighbourhood in 1796, stands empty; and the inner parts are unfinished, its proprietor being absent.

With respect to the evident and striking varieties of fossils, which the mountains here present in horizontal beds, and

which I have farther observed throughout Taurida, it will be useful to enter into a more particular account; as, otherwise, the following description of the western mountains along the sea-coast could not be clearly understood.

I have already, on several occasions, especially in pp. 11, 20, 21, 42 and 93, mentioned the more recent calcareous stratification which composes part of the plain country, and also forms a considerable portion of the Crimean mountains; so that being often from forty to fifty versts and upwards in breadth, it represents nearly the segment of a circle, extending from Inkerman to the environs of Kaffa. From the northern plain of the peninsula, this horizontal calcareous bed at first rises with a level surface, which afterwards becomes uneven, or in a manner undulated. In its farther progress toward the mountains, it exhibits ruptured hills, or such as are intersected by vallies; and they uniformly, though gradually, decline towards the northern points of the compass. In a southern direction, however, they terminate abruptly, forming in general rocky ferrated terraces; the layers of which, when discernible, likewise appear to be gently elevated above the horizon. These strata are in some places composed of a more or less compact limestone, which frequently lies bare to a considerable extent, and is apparently cast in one solid piece, without any visible petrifications. In other situations, it consists of a less concrete lime, approaching to marl, divided into layers, and abounding either with lenticular stones, or with numberless minute snails granulated like oolites. In a few other parts, it is sparingly interspersed with large petrified oysters, both of the common and of the crested kind; or it is entirely composed

composed of the fragments of shells. Lastly, also, it exhibits a cretaceous marl, or a very calcareous and soft clayey marl, but more rarely a mellow chalk. The solid beds of lime are frequently mixed with small pebbles only, or at the same time with shells and their fragments, or contain large portions of sand and gravel. Similar strata, of a yellowish ferruginous fossil, the constituent parts of which are a hard sandy marl replete with quartzose flints, appear at the top, are easily decomposed by the air, and the surface is often partially covered with gravel; so that a superficial observer might be led to believe, that these diminutive pebbles had been conveyed to the heights by the force of water. Such tracts likewise occur near the banks of the Salgir, those of the brook Fondukly, and in several places on the road leading to Karassubafar.

The calcareous hills, singly, as far as the banks of the Belbek, are divided partly by extensive plains, partly by narrow defiles, and again combine between the Belbek and Kafikly-Ousehen into a connected lofty ridge, which is the highest part of the more recent stratification of lime in the whole Crimea; consisting almost entirely of cretaceous marl, that often breaks into cuneiform fragments, or exhibits marine shells in its composition. No petrifications can be traced in this ridge, but it contains many particles of pyrites; and likewise declines gradually towards the North, where it is covered with a thin stratum of black mould. In a southern direction, it terminates abruptly, presenting barren white terraces and precipices; while on its northern side it encloses the extensive valley watered by the Kafikly-Ousehen; of which, however, it forms the elevated part. Such ridge commences with the
mountains

mountains of Inkerman, that terminate towards the sea near the bay of Akhtiar, where the caverns or grottos are hewn in a more solid calcareous stone. It proceeds at first towards the East, then to the South-east, under the names of Kokkagatsh and Tshertelkaya, to the distance of ten versts and upwards. In its progress, it forms high rocky terraces called Tshaplak-Kaya *, near the village of Marmora, which was formerly inhabited by Greeks, but is now deserted. It farther rises along the brook Ai-thodor, where it is termed Shuldan or Shuludan-Kaya; being interrupted near the village of Shülü, by a deep and narrow valley extending transversely to the Belbek; and, at the bank of this rivulet, it is by a violent revolution of nature apparently split and divided into many scattered portions of rock; though, at the eastern side of the valley, it again continues without interruption, as will be explained in the sequel. This narrow valley in which the small brook Souk-tshesmé rises and takes its course to the Belbek, is contracted to such a degree, (between the Shuldan-kaya itself, the abrupt angle of which is called *Elli-Burun*, or the tempestuous corner, and the lofty rock Makkup or Mankup where the fort of that name is situated, and hereafter to be described,) that I could not without great labour and expence procure a coach-road through such defile to the village of Shülü. On both sides of the dale, the prospect is intercepted by straight rocks, from which prodigious blocks are precipitated every winter. A few years since, remarkably large pieces were disengaged from the rock of Mankup, and partly thrown over the brook Rikoshet, so as

* Beneath these terraces, there are monastic cells hewn into the rock, known by the name of Karakoba, and which resemble those we noticed at Inkerman.

to reach the contrary steep side of the valley.— On the North-eastern quarter, the rock of Mankup is separated from the calcareous ridge by a similar deep valley, in which a small brook likewise rises. The opposite rocky walls of these vallies appear exactly as if the mountainous tract had in this place been ruptured and divided by some powerful natural event; and such conjecture, in accounting for their origin, is rendered still more probable by the rent appearance of the rocks towards the Belbek. For it cannot be easily conceived how those insignificant streams, which purl down in small cascades, could have effected such excavations. The elevated surface of the hills along the whole valley, above the rocky walls, as well as the mountain of Mankup itself, is thinly covered with the *Pinus maritima*, which, except in this place and on the hills around the village of Ai-thodor, no where occurs in the Crimea, at so considerable a distance from the sea.

Beyond the transverse valley near Shülü, the middle of which is thus occupied by the very extensive rock of Mankup, the high calcareous ridge again presents steep rocks on its southern side; and, after becoming still loftier, it proceeds in a North-eastern direction towards the village of Albat, where it declines near the banks of the Belbek. On the opposite side of the river, however, it is less elevated, being interrupted by the Katsha and some other vallies; it then takes its course North-north-east; and at length terminates at the dissevered calcareous mountains in the vicinity of Bakhtshifarai, Dshufut-Kalé, and the village of Mangush, which is inhabited by Moldavian colonists. It will be evident that I have here collectively stated the observations made during several journies,
and

and at different times, in order to describe this ridge of calcareous marl throughout its whole extent, amounting to upwards of twenty-eight versts; though it is less capacious, and more frequently divided into hills, in the western quarter of the Crimea.

Such mountainous ridge, indeed, appears to have been deposited on the more solid lime-stone, which frequently contains a greater proportion of marine productions in a decomposed, though discernible state. For this fossil re-appears in the valley of Kafikly-Ousehen, forming, as I have before observed, the surface of the whole Chersonesus. In lofty situations it is often exposed at the top, and its strata likewise evidently decline from the higher southern coast towards North-west, in a very gradual manner. In its more elevated parts, especially towards the ancient stratified mountains, it occasionally presents steep and abrupt borders. One of these precipices occurs beyond the vallies of Balaklava and Karani, in a transverse direction. It consists of a firm, coarse, calcareous schistus, abounding with petrifications; and, exactly opposite to Karani, it presents a three-fold grotto, which may be perceived at some distance. In the central one, after descending an excavation in front, we met with a narrow but well-hewn entrance, having an aperture at its lower side for admitting light into the grotto. On passing this entrance, we were conducted through an arched narrow passage, of smooth and fine workmanship, with steps extending several fathoms downward into the rock, and receiving a faint light through a hole made in the next grotto on the right, but afterwards turning farther into the mountain; so that we could not, without lights, arrive at its extremity, which is a

low excavated place, half filled with the fossil disengaged from its roof. The two collateral grottos are circular cavities, apparently formed by nature within the rock, and have a large avenue. That on the right is separated from the middle anterior cavern only by a square hewn pillar. They appear to have been the work of some hermits, who availed themselves of the natural caves already existing in this place. - At the foot of the very gradual declivity of such eminence, we traced the remains of ancient stone enclosures, which probably served as the boundaries of fields or gardens; and, in this place also, the Greek inhabitants of Karani possess arable lands. The road, leading thence to the monastery of St. George, crosses a high calcareous rocky flat, incumbent on the more ancient mountain that resembles marble in its consistence. Here, as on all similar spots of the Chersonesus, and likewise on the mountains of Balaklava, the *Asphodelus luteus* and *Iris pumila* produced abundance of blueish yellow and pale yellow flowers during the month of April.

The rivulet Beyouk- or Kafikly-Ousehen, divides the stratum of cretaceous marl above mentioned from the more solid bed of calcareous fossil; but immediately behind the stone-bridge, over which the principal road passes to Balaklava, this separation is marked by another collateral way leading to Akhtiar. On the other hand, the road crossing the valley from Tshorguna to Balaklava, intersects on the right the calcareous stratum abounding with marine productions, from the marmoraceous and schistous mountains on the left.

Contiguous to the manor-house in the village of Tshorguna, above the rivulet Ai-thodor, the higher stratum of cretaceous

marl which forms lofty hills, is supported by the more ancient calcareous rock that is not unlike marble. Towards the upper banks of the Beeyouk-Oufehen, it occupies a greater breadth, rises into more elevated hills exhibiting naked rocks, which are occasionally overgrown with two species of juniper and Christ's thorn; thus serves as the foundation of all those woody mountains beyond the brook, that present themselves at one view; and encloses it with a deep rugged valley which is intersected by the brook proceeding thither from the more southern dale of Baidari. The lower base of the mountain forming rocky terraces near the village, consists of the more ancient calcareous marbled stone, which in this place contains scarcely a vestige of petrifications; though in other parts of the Crimea it is sparingly mixed with obliterated fragments of corallines, such as most frequently occur in old limestone rocks. The fossil here alluded to is very solid, generally grey, or shaded with yellow and red, sometimes spotted like a *Breccia**, or even interspersed with small pebbles. Its grain can with difficulty be perceived, and the whole is similar to a horn-flint. In some places it is evidently deposited in thick and nearly horizontal layers, which are curved according to the shape of the mountain. At a certain height above this calcareous rock, towards the ridge of cretaceous marl already described, there is a fossil resembling the latter, and rising so as to form considerable mountains, in which whole beds of white and grey pyrites lie scattered at various distances. In a few clefts, a very different, but moderate stratum, composed partly of sandy

* *Saxum conglutinatum fragmentis lapidum.* — *Nemn. Polyglott.*

schistus, and partly of coarse sand and other mineral congeries, appears immediately above the hard calcareous rock; and, afterwards, the cretaceous marl is accumulated into hills.

The chain of marmoraceous mountains just alluded to, holds a principal rank among the constituent parts of the more ancient mineral stratifications in Crim-Tartary. I shall therefore present the reader, by way of introduction to my subsequent journies along the southern coast, with a general retrospect of this very ancient alpine region, as the result of those excursions:

The oldest and most lofty mountains of Taurida form the southern, and in a manner abrupt, border of this beautiful peninsula. They extend from Balaklava to the vicinity of Theodosia or Kaffa, a length of nearly one hundred and fifty versts, but are of an unequal breadth, which is most considerable in the central situation of the hills, and decreases towards the two places before mentioned. According to general appearance, they consist of high ridges and crests, nearly following the direction of the horizontal layers, being remarkably divided by broad and narrow vallies, craggy on the South side, which is diversified with rocky terraces, but more gradually declining towards the northern points of the compass, and resembling the more recent calcareous strata already described. The whole series of these mountains rises likewise, though more perceptibly toward the South, and exhibits along the sea-coast an almost uninterrupted chain of prodigious lofty precipices, declining in a northerly direction towards the steep calcareous inland rocks; and forming those bleak and elevated alpine flats which the Tartars denominate *Yaila*, and preferably visit during hot summers, on account of the rich pastures they

afford for cattle ; though such tracts are covered with snow till the latter end of May. The hollows or rills caused by rain or snow-water on the highest ridge of these mountains, generally proceed on one side toward the North, or North-west and North-east ; on the other, they take a southerly course ; and, as far as I have been able to ascertain, no where penetrate ; though, in the most elevated points, they often come nearly in contact with each other. On account of the height from which they descend, and their vicinity to the sea, those last alluded to are uniformly of short extent, but uncommonly steep ; making deep excavations, and sometimes uniting their currents. All the rivulets thus originating, empty themselves directly into the sea : hence, on this side of the mountains, we meet with no considerable streams, though often with rapid torrents. On the contrary, the more open vallies and gentle brooks variously join together during their long winding course. The latter pass through the more recent calcareous mountains into the plain country ; and, by the conflux of many springs, they form the principal rivers of the Crimea, which discharge themselves partly towards the West into the Black Sea, such as the Kafikly-Ousehen, Kabarta or Belbek, Katsha, and Alma ; or, in a North-easterly direction, into the Sivash or the Sea of Azof, like the Salgir with its numerous collateral rivulets, the Korassu, and the Yendol. These petty streams, as I have already observed, resemble in general only large brooks descending from mountains over a broad, stony bed ; but, during floods arising from the accumulation of rain and snow water, they for a short time swell into torrents, on account of the frequent cascades thus occasioned.

Concerning

Concerning the nature of these more ancient and lofty mountains, I cannot follow the division adopted by my worthy friend Hablitzl, in his description of the Crimean Peninsula. Consistently with orographical principles, the whole is simply a very high tract of horizontal beds, destitute of the true grain, or the alpine part; and which contain only a few varieties of stratified fossils, repeatedly disposed in alternate layers. Their height and capacity are unequal, and proportionate to the different strata of which they consist; accordingly as these strata have been more or less capable of resisting the influence of the atmosphere, or the destructive effects of water. The most elevated and almost uninterrupted ridge is that situated along the sea-coast from Balaklava to Alushta. Here it forms, by its northern inclination towards a plain, first the Yaila of Baidari, or Uffundshi; next, that of Kokos; and at length, towards Alushta, the Babugan-Yaila. Some detached hills, however, attain to a height still surpassing such alpine elevations. In the vicinity of Alushta, this mountainous tract is interrupted by a broad valley, in which the separate and steep Tshatyrdag, or Tent mount, the most lofty in the Crimea, rises more distantly from the shore, between the source of the Alma and that of the Salgir. Toward the East of the valley lies the Yaila of Temirdshi, which is occasionally steeper than the opposite mountains, but somewhat lower; and with the latter are connected, in an almost continued chain, the Karabé-Yaila, and the high hills above Usküt; which now proceed, after frequent interfections, towards Sudak, and as far as Karadagh. I have observed each of these divisions in my separate excursions; and, on such occasions, I had at the same

time opportunities of remarking various sections of these mountainous regions, for which purpose I preferred the cross roads: High and steep as the mountains of the Crimea present themselves at the sea-coast, so that in several places, a few versts only from the shore, they rise to the height of one thousand feet and upwards above the level of the Black Sea; yet, according to the observations of mariners, their bed or basis is, for the most part, said to be alike steep, and of a depth perhaps exceeding their height; because no ground can be discovered by the plummet, at the distance of one verst from the coast. The soft places for casting anchor are chiefly around the promontories; but, towards the rocky bays, the whole abounds with shelves, by which the cable is apt to be cut and materially injured. Nevertheless, the coast of the different bays generally exhibits a narrow strand, consisting of gravel and pebbles; while the foremost crags and edges of the mountains, or capes, project abruptly into the sea. The foot of the eminences, which is covered with fragments of rock and with clods, commonly rises from the lowermost strand so precipitately, that it can be ascended only by horses, in an oblique direction. The upper part is usually surrounded with very steep and lofty rocks, which are in some parts separated, and in others closely connected, to a considerable distance. Through a few interfections between the aggregate rocks, especially in the western tract of mountains, the natives are enabled to descend the alpine heights, and to reach the sea-shore by means of a few dangerous passages, calculated only for travellers on horseback.

The

The principal roads of this description are between Balaklava and Alushta, namely :

1. From the valley of Baidari, crossing over to Foros, as well as from Baidari itself.

2. From the same valley, by way of Skelä to Mukhalatka, down the reputed *Merduen*, or Stair; by means of which the horses are obliged to descend the most dangerous of mountain-paths, from rock to rock, not unlike the steps of a stair-case; so that it is scarcely possible to re-ascend them.

3. From Skelä, in the valley of Baidari, by Uffundshi, and what is termed the Baidar-Yaila, down the mountains impending obliquely over Leemena, by means of a separate path to Simäus, or Alupka.

4. From Kokkos, up the steep valley along the Kabarta, proceeding to the Yaila, and in a direct line to Gaspra, or Alupka.

5. By Mangush, Stilä, and Ufenbakh, directly to Alupka.

6. The road ascending the banks of the Alma, to Avutka and Yalta.

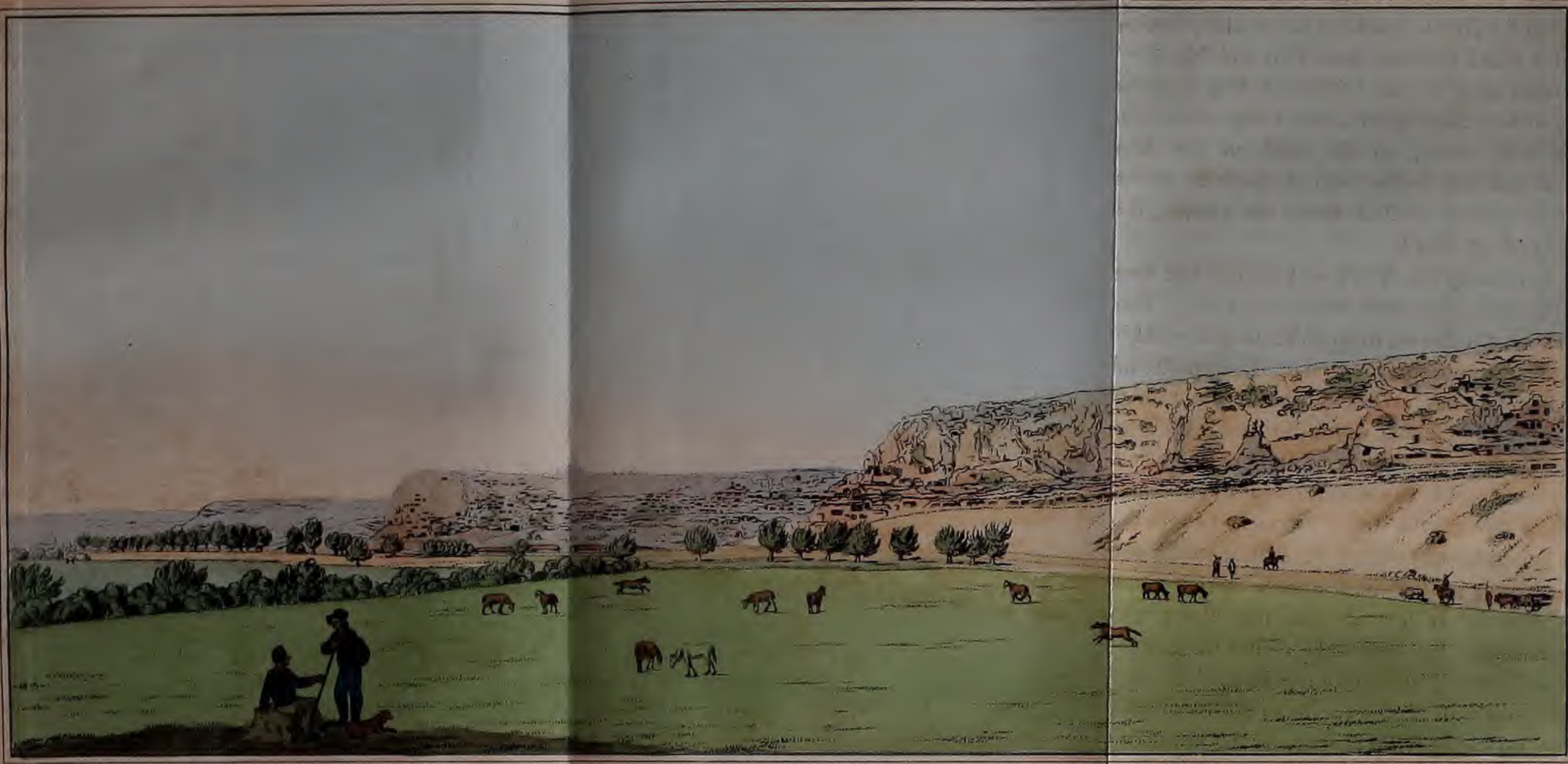
There is another way leading up the Salgir, and which, like that last mentioned, may be occasionally passed with *arabas* or two-wheeled carts. All the other roads in the western part of the mountains, cannot by any means be rendered useful for carriages. On the contrary, in the quarter extending from Alushta to the East, where the highest alpine section becomes progressively more remote from the sea, there are several coach-roads over the mountains leading to the coast: such, for instance, are those from Karassubasar to Kapfokhor, and to Sudak; to which places very capital roads were made for the late Empress, as likewise to Koos, and from Kaffa to Otus.

In order to afford a general idea of the constituent parts of these ancient stratified mountains, I shall previously enumerate the fossils of which they are most frequently composed :

1. The primitive calcareous rock already mentioned.
2. Sandy schistus.
3. Layers of clay, disposed alternately with the preceding minerals.
4. *Breccia*, or pudding-stone, consisting of pebbles cemented together.
5. Several varieties of *Wacca* ; and, lastly,
6. Serpentine-stone, which occurs most rarely among these fossils.

The grey and solid calcareous rock, generally composes not only the steepest and most lofty hills, especially in the western part of the mountains, but likewise the coronary rocks and their summits ; while it also forms the greatest part of mount Tshatyrdag. This fossil is not easily decomposed by the effects of air and water. It sometimes appears in prodigious masses and layers irregularly disposed, sometimes under the form of oblique squares, or divided into regular parallel strata of various thickness. In some places it is grey, of a very fine grain, marked with fissures of an ochreous or reddish tint, frequently intersected with sparose veins, and may occasionally be wrought like marble ; but, in other situations, it is a genuine *Dysodes*, or fetid stone, which partly has the same marmoraceous texture, partly breaks of a blackish colour, and is of a more earthy or laminated nature than the former. Very few perceptible traces of petrifications can be discovered in it ; and these mostly consist of corallines completely changed. Though such rock is very hard,

PLATE 11
No. 116



Quarter 1847

Stoddard 1847

hard, it abounds in fissures; and, where it is exposed on the surface, as is the case in numerous hills, it is gradually reduced by the combined action of air and frost to a coarse gravel, and at length produces a yellow marl, in which alpine plants thrive luxuriantly. Towards the declivities, the strata of this fossil are often disposed in a direction nearly horizontal; and sometimes, particularly near Tshorguna, and in several other places, they evidently bend, or present an undulated appearance, according to the shape of the eminences and mountains composed of the same material. Even at a distance, an experienced eye may with tolerable exactness distinguish the heights consisting of this species of lime-stone, which is by the Tartars denominated *Kürük-Taşh*, or the Blue Rock. (See the sixth vignette, and the sixteenth plate.) It is scarcely ever observed in thin layers between schistous minerals; but its thick strata always form large naked rocky hills, of an obtuse figure. They are in general most lofty towards the South, where they terminate in precipices; and, if such rocks exhibit stratifications, these uniformly occur towards the North or North-west, under an inclination approaching to that of an angle of forty-five degrees. An idea of their structure may be formed, by inspecting the eighth and sixteenth plates, but especially from the sixth vignette. I have already observed, that the more recent horizontal bed of limestone is incumbent on this rock, either immediately, or with interposed layers of free-stone, in the same manner as it is deposited on the more ancient strata.

The calcareous rock above described is the most general species of stone constituting the higher mountains of Taurida; and it sometimes also occurs under the form of *Wacca*, which

is again composed of gritty fragments, caused by the destructive effects of past ages. The horizontal beds of clay are the next mineral, which likewise contributes a large share towards the formation of the more ancient hills. The main tract of all the stratified heights lies on one side between East and South-east, and on the other, between North-west and West; a direction which occasions a great variety of angles, with respect to the shore. Thus it happens, that a section of such strata presents itself along the coast, and that their profiles appear most distinctly in the clefts produced by torrents. In the eastern part of the mountains, they are almost uniformly impregnated with Epsom-salt, but seldom in that towards the West. Their principal constituent is a grey, or blackish, poor, argillaceous schistus, acquiring various degrees of hardness; though easily reduced by moisture into small scales, or diminutive angular fragments, and not effervescing with acids. Its beds being from a few inches to several feet, and even fathoms in thickness, are generally interspersed with thin plates and layers of a more or less calcareous sandy schistus of different shades, such as grey, yellow, rust-coloured, and ferruginous, or even blackish; and which frequently extend in a parallel line to a considerable breadth. These schistous strata are alternately disposed with those of clay, at irregular distances. Their thickness is from one quarter of an inch, or less, to the bulk of several feet. Their course and inclination towards the horizon resemble those of the calcareous beds; but they very seldom occur standing on the edge, nor do they ever appear in such a perpendicular position as those last mentioned. Among the harder layers of schistus, which are interposed between crumbling clay, there is found

found a black slate, occasionally mixed with sand, and producing little or no effervescence with acids. It frequently admits of being split into thin lamina, and is sometimes obtained in very large plates, which the Tartars employ for covering their huts. In the eastern mountains, an uncommonly hard free-stone is frequently met with; its grain is scarcely discernible. The stone lying there is burst into very extensive plates, or square columns, when it approaches the perpendicular situation: farther, it easily separates on exposing it to heat; is of a ferruginous complexion; and is blended with diminutive grains of mica. This fossil, alternating with softer layers of the same species, is very often deposited in beds of such capacity, that it affords an useful free-stone for building. Its hard part is in many places thinly covered with minute transparent quartzose crystals, and also contains occasionally small veins of regular rock-crystal. With this free-stone may likewise be classed those strata of sandy siliceous mill-stones, cemented together by means of quartzose grains; which constitute whole mountains, and occur in the vicinity of Stilä and Sudak. In some parts, such layers of argillaceous schistus are of a marly consistence, and strongly effervesce with acids; in which case they abound with fissures of calcareous spar, though more rarely with radiated crystals. In a few places, they possess the solidity of the schistus occurring in mines; in others again, they are remarkably ferruginous, and are then likewise productive of regular hæmatites, which sometimes appear in veins, and sometimes in whole beds, so that they may with advantage be used in smelting. The colour of this iron ore is either reddish, brown, or grey; its texture, porous and scaly, or

close, heavy, and argillaceous. No traces of other metals, however, have hitherto been discovered in the Crimea.—Those mountains, which consist exclusively of stratified clay, may in general be distinguished at a distance, by their external appearance; as they not only decline more gradually, but are likewise marked with numerous furrows made by torrents; and all the gutters for conducting the water down the southern coast, are excavated in such layers. I shall endeavour to shew, in the particular description of some districts, what influence these beds of clay have already had, and are still likely to produce, on the derangement and demolition of the Crimean mountains in various situations; because the former occupy considerable spaces between the solid horizontal strata, being continually acted upon and undermined by subterraneous springs. The more compact beds of free-stone, in such mountains as principally consisted of soft beds, have remained standing like crests or walls; and thus we see hills formed of calcareous rock, and other firm bodies projecting above them in bulky masses.

Another very common species of fossil, in the Crimean heights, is the *Breccia* or Pudding-stone, which always occurs in very thick layers, and forms whole mountains. When in a solid state, it projects over the softer eminences in the form of crested rocks and precipices, as is distinctly represented in the fifteenth plate. The solid, as well as the soft parts, serving to connect this mineral, vary according to different situations, and even in the same stratum. In some places, the small globular stones and gravel are combined with a grey petrified clay; in others, with a fine marl or chalk, or with clay and siliceous matter; very frequently also with ferruginous brown-red clay,
which

which is either in a compact state, or so loose, that the stone may be broken by the hand; when it is likewise decomposed by the air, crumbling to pieces, and affording to the hills and vallies of such regions a surface, consisting entirely of small pebbles. The congeries of fossils in these cemented stones are generally small, most of them not being larger than a walnut or an egg; and these are sparingly mixed with a more or less coarse sand. There are however layers, containing globular stones of the size of cannon-balls, or as large as bombs, amounting to several hundred weight; and in which all the ingredients are of a coarser nature. The constituent parts of this aggregate correspond, on the whole, with the hard species of mineral forming the mountains of Crim-Tartary. They are occasionally composed of calcareous rock, of free-stone, of argillaceous schistus, and of quartz; but seldom of a shirly wacca. In no instance have I been able to discover any vestiges of granite; because this species of rock is never found among the globular stones on the coast of the Crimea.

Lastly, there occur a few other kinds of rock, though less frequently than those above specified, particularly about the middle of the mountainous tract which extends along the shore: for instance, wacca interspersed with shirl; a mixed species of rock resembling granitell, and composed of lime and *Talcum corneum*; the serpentine stone, or *Ophites*, and similar fossils. On these I cannot here expatiate; as they will be mentioned in their respective places. It deserves, however, to be remarked, that all such minerals follow the same direction and declination in their layers, and consequently belong to the same class of horizontal stratifications as those already described.



Having now given a general introductory view of the Crimean peninsula, I shall relate the observations made during my travels into the more elevated mountains of that country. I ought, however, previously to communicate the promised description of Mankup, an ancient Genoese city, which appears to have been the last asylum of the Ligurians, after they were driven from the coast. Thus, I shall be enabled to follow a regular plan in the subsequent narrative, and at the same time have an opportunity of stating here a few particulars respecting other objects, which excited my attention in this vicinity.

The rock supporting Fort Mankup can be ascended only by two paths. One of them is made thither from the vale watered by the brook Ai-thodor, along which the distance to Shulü does

does not exceed five or six versts ; and the road leads over the extensive, level, and beautiful meadows, called by the Tartars *Philegus*, and by the Greeks *Pelagos*. This valley, in former times, probably was an inland lake : for it is completely surrounded by lofty mountains of cretaceous marl and limestone ; uniting at the parts where the brook Ai-thodor enters and again leaves such meadow ; forming in a manner rocky gates through which the accumulated water has apparently penetrated. Farther, the valley of the Ai-thodor for the most part separates the later horizontal bed of limestone, as well as the hills of cretaceous marl, from the more ancient stratified mountains situated on its left side. A few parcels of the former only occur on the same side of the rivulet towards the South, and appear as if they had been slid over the older strata.

The way leading from the valley of the Ai-thodor to Mankup, is passable by Tartar arabas ; and I have at various times availed myself both of this, and of the other road which proceeds upwards from the village of Kara-Ilas, over the transverse dale, along the western side of the rock. The latter can, however, be pursued only by travellers on foot, or on horseback ; for it passes along the orchards of the villages Youkharé, or the Upper Kara-Ilas, and Bugas-Sala ; which last mentioned place is rather conspicuously situated on the declivity of the hill supporting the rock of Mankup ; and is eight versts distant from the Lower Kara-Ilas. After riding through a narrow rocky glen overgrown with wood, and climbing with our horses over steep paths, that frequently resemble flights of steps, we ascended the lofty promontory, which from almost every quarter presents craggy sides and precipices. On attaining
somewhat

somewhat more than two-thirds of the whole eminence, we met with considerable remains of a strong and high wall cemented with lime ; extending over the accessible part of the glen, as far as the steep declivity of the latter ; and being erected partly of hewn, partly of rough stones. Near the path, it was probably furnished with a gate ; but this, together with a portion of the wall itself, has been demolished. A very ancient Jewish cemetery, with many bicornous tomb-stones, appear at a short distance upward, where the dale abruptly declines ; and hence it is evident, that the city of Mankup was also inhabited by Jews. — We arrived at the first wall of the town in the upper marshy part of the glen, whence a spring issues, and occasions the humidity of the soil. To the left we noticed a spacious grotto with a regular door, and in its vicinity some open cisterns hewn in lime-stone. These are frequented during the summer by the Jewish carriers of Dshufut-Kalé, who dress the hides brought thither with the tan extracted from the *Rhus Coriaria* and *Cotinus*, that grow abundantly on the rising ground ; and the water afforded by this place, is likewise better adapted to such purpose. The wall, which is here provided with a round tower for the protection of the entrance and of the spring, extends beyond the valley along the less craggy declivities ; presents angles made for its defence at moderate distances ; is somewhat more than an arshine in thickness ; not quite two fathoms high ; and, being cemented with lime, it is mostly in an entire state, though some parts of it are more or less broken off. A few hundred paces farther, in an easterly direction, there is a gate at which we arrived from the deep valley of the Ai-thodor, by the very difficult

road above mentioned ; our carriages being drawn by steady oxen. Near this gate, we met with an enclosed wall ; and in its vicinity, beneath a level rock, with a grotto, that now serves as a resting place for cattle. Above such fountain, we noticed a Tartar inscription on stone, pointing out the year 953 of the Hegira. The upper surface of the rock, being rather hilly, is defended on its steep side by the wall before alluded to ; but, in all other directions, by craggy and terrific rocky precipices of uncommon height. It is covered with a fine green turf, on which bushes and degenerate fruit-trees are thinly scattered. Beside a small synagogue, and a few houses that were formerly inhabited by Jewish tanners, the platform of this rock exhibits only the ruins of dwellings, and two relics of Christian chapels. In a niche directed towards the East, and belonging to one of the latter, we discovered the images of Saints painted on the wall ; and, in another, the picture of the Virgin Mary could be particularly distinguished with tolerable accuracy. Contiguous to the inner fort, there is a metshet, or Tartar house of prayer, which is in a better state of preservation. This interior fortification consists of a very strong and high wall drawn transversely, so as to intersect the narrow promontory which the mountain forms towards the East, beyond the valley of the Ai-thodor ; and also, of a square castle two stories high, being situated close to the wall. The first floor has only holes for small fire-arms ; but the upper story, which is now in a ruinous state, appears to have been provided with embrasures for discharging cannon-ball. From the summit of this cape, we enjoyed a most delightful prospect over the surrounding vallies and the Chersonesus, extending on one side

to

to the Black Sea, and on the other to the mountains as far as the Yaila of Uffundshi. We also found here a few pear-trees and shrubs in detached situations. At the declivity of the eminence, especially on the South side above the valley of the Ai-thodor, we met with several grottos excavated within the rock; but the most remarkable caverns occur in the farthest eastern angle of this promontory. Here various shallow basins and gutters, for collecting rain water, are hewn in the level part of the cape; and, at its northern extremity, a flight of very dangerous steps is cut out, by which a person may descend into a very spacious hall, about twenty-one feet long, and sixteen feet and a half broad, hollowed out of the solid fossil; and the roof of which is supported only by a square pillar. On its eastern side are two, and toward the South three, closets with regular entrances. Two passages in the western quarter lead to a collateral apartment, which is likewise twenty-one feet in length, but scarcely fourteen in breadth; having in the back ground a broad terrace of stone, not unlike a divan; and being separated from the main room by a wall of the entire rock, that is yet standing. From this apartment, another door on the North side leads to a terrace, whence the deep glen of Kara-Ilas may be surveyed; and to which a stair-case hewn in the rock conducts from without; but, being totally unguarded along the precipice, it is still more dangerous to ascend than the flight of steps before mentioned. On the southern side, there is another open terrace, at which we arrived after descending a few steps. It contains a cistern covered by the projecting rock; and near it is a spacious grotto excavated in the mineral, together with a smaller stair-case,

case, by which we again reached the level top of the mountain.

From the preceding description it is evident, that the city of Mankup is not of very remote origin; and it is the more surprizing that we are so little acquainted with its history, or its vicissitudes. Shortly before the Crimea was incorporated with the Russian empire, it is said to have been inhabited both by Tartars and Jews. At present, or since the year 1800, even the latter have abandoned their dwellings, and the town is now completely deserted.

As I have above alluded to the village of Kara-Ilas, I am induced to communicate a few particulars relative to its situation and charming environs; so that no remarkable objects in its vicinity may elude my attention.

This handsome and populous village is divided into the upper and lower part. It belonged to Mekhmet Aga, who was treasurer to the last Khan of the Crimea, and was subsequently nominated Counsellor of State in Russia, but who is lately deceased. Its site extends as far as the steep valley, which leads to Mankup and the villages on the banks of the Ai-thodor. Lower Kara-Ilas lies along a natural wall formed by rocks, with which the lofty strata of calcareous marl, that are apparently broken off in the valley before mentioned, again rise along the brook Souk-tshesme*, as well as on the side of the Belbek, to a considerable distance; forming here

* *Souk-tshesme* literally signifies the Cold Spring.

a high rocky precipice, and on its top exhibiting ten projecting round towers, not unlike those of an ancient fortress. In an eastern direction towards the Belbek, the country is more open, there being only detached rocks remote from each other, and some of them presenting whimsical figures. The large assemblage of rocks rise from two to three hundred feet above the current of the rivulet. Four prodigious blocks appear to have been separated from them, and have tumbled down into the valley, very near the manor-house; where they now remain fixed in the confused fragments constituting their basis. It is probable that two of such masses lying nearest to the building, consisted of one solid piece, before they were divided through a cleft. Their length exceeds nine fathoms, and they are from three to four fathoms thick, being composed throughout of a pretty firm cretaceous marl, interspersed with helicitæ. The evident state of decay prevailing in these calcareous mountains; the divided rocks fronting the eminences; and the whole situation, render it probable that the river Belbek anciently flowed through the valley of Kara-Ilas, which is at present watered only by the small stream of the Souk: and, though the former now runs at a considerable distance from this place, yet its current is so powerful and rapid, that it may in past ages have thus penetrated and dissevered the heights above mentioned. It is impossible to surmise what changes in the vallies, and transformations of hills, may have been caused by a river that collects its waters from the lofty and rent mountains of the whole country through which it passes, especially by frequent variations of its course. Farther, as large fragments of rock are, in the Crimea, often precipitated from mountains undermined
by

by water, it may also happen that such masses fill up the bed of a river in a narrow dale, and thus compel it to take a different direction. Indeed, the valley through which the brook Ai-thodor now flows, and which extends to the banks of the Belbek, as far as the environs of Fotufala, appears formerly to have served as an outlet to a larger stream; and many of the excavated and enclosed vallies may at first have formed lakes, till the accumulated water opened itself a way, by bursting through part of their banks. Let it, however suffice to have mentioned these conjectures, which in my opinion are far from being groundless.—The manor-house erected at Kara-Illas, is one of the most handsome in all Taurida, not only with respect to its very romantic situation, but likewise for conveniency, and on account of the excellent gardens in its vicinity. It consists of a mansion appropriated to visitors; a Harem enclosed with high walls, near which are a separate small garden and a bath; farther, of a more ancient dwelling built on higher ground; lastly, of a very respectable metshet erected in a still more elevated situation; and, adjoining to this, we observed the family-tombs. Besides, there is a mill turned by the water of a canal passing by the house at the declivity of the mountain, and the current of which is confined by dikes of masonry-work. The gardens below the buildings, and the Lombardy poplars planted on the banks of the brook, greatly contribute to this beautiful scenery; while all the low ground, extending along the village to one verst and a half, is a continued series of gardens and meadows. The distance from Tshorguna to Kara-Illas, through the vallies of the Ai-thodor and of Mankup, does not exceed fifteen versts.

In order to institute a minute examination of the more ancient mountains, I propose first to survey the hills occurring in the environs of the harbour of Balaklava, as forming the commencement of these eminences in the western quarter. By the shortest road of travelling, Tshorguna is only six versts distant from Balaklava. The valley dividing the latter from the older mineral strata, extends as far as the Greek village Kadi-koi, which is situated two versts on this side of Balaklava, and very near the extremity of the haven. Steep and naked rocks enclose the port on both sides, and contract its entrance by sea, not unlike a gate. They consist entirely of the marmoraceous limestone rock that begins near Tshorguna, and are similar to those surrounding the deep valley in which the Greek village of Karani lies, in a more western direction. This hard calcareous mineral has no regular division, but presents rough clefts pervaded by a reddish clay. In some places, it resembles a red and white breccia, the stony fragments of which are white, and the cementing matter is red; the whole admitting of a polish like marble. In other situations, such limestone rock is, in the same manner as that of Tshorguna, disposed in thick curved strata; in which we occasionally noticed single entrochites, or almost obliterated traces of milleporites. Farther, such fossil affords by burning a much superior lime to that obtained from the more recent strata. It projects into the sea, exhibiting various obtuse capes and dreadful precipices, two of which form the mouth of the harbour; while the western promontory is the Aya-Burun above described, near the monastery of St. George. In the vicinity of the latter, the marmoraceous limestone rock suddenly declines, as if making
a step;

a step; and the more recent white calcareous stratum, being full of discernible petrifications and alternate thick layers of oolites, is in a manner slid over, and covers it. Towards the neck of land, however, the brown schistus appears beneath the bed of limestone, and sinks progressively lower in a westerly direction, till it is at length completely immersed in the sea, at a short distance from the ruptured isthmus; which I am inclined to denominate the Cape of Iphigenia. Nevertheless, a layer of free-stone, with fine quartzose pebbles resembling pearls, and evidently formed according to the inequalities of the schistus, here likewise occurs in a few detached places, especially to the East of the land's point before alluded to, being deposited near the recent strata of limestone. At the divided part of the isthmus itself, we again met with fragments of the fossil last mentioned, lying immediately above the schistus, and having the same declination as the latter towards the North-west.

The ancient fortress of Balaklava was probably erected by the Greeks, and subsequently repaired by the Genoese; though it is now in a ruinous and deserted condition. The hill on which it lies towards the eastern quarter of the harbour's mouth, is intersected on the same side by a valley. Here it presents a soft pudding-stone that easily crumbles to pieces; being a congeries of a great variety of calcareous and quartzose particles mixed with gravel, so as to form a real, but not completely petrified marine soil. None of those rolled basaltic fragments, which lie along the sea-coast, and are mingled with small columns of shirl, are discoverable in this kind of breccia; nor have I met with the basaltic here in its natural situation, though a few specimens recently broken are occasionally found



quater tel.

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emigrated, or were dispersed, when the Crimea was occupied by the Russians, this town, together with the surrounding country extending to the banks of the Beeyouk-Ousehen, including the villages of Kadikoi, Karani, Kamara, and Alflu, (after removing the rest of the Tartar families to other places,) were granted as settlements to a regiment of Albanians, now reduced to one battalion. Thus Balaklava has been completely changed into a Greek town, of which the ninth plate will afford a perspective view, being faithfully drawn from the opposite western extremity of the harbour; but the ordinary dress of the Arnauts residing there, and of their women, is represented in the tenth plate. This regiment is not incorporated with those of the line: it was raised chiefly of Greeks, who had been in the Russian service in the Archipelago. For their support, the Imperial Court not only granted the territory above mentioned, but likewise allowed them pay and provisions, for which purpose the sum of seventy-two thousand rubles was assigned by the treasury. During peace, however, they seldom perform duty; because a small number only is required to be on guard, or as patrols against occasional depredations; and at present they are also obliged to form piquets for the security of the southern coast. Few of these fencibles cultivate either vineyards or fields; and still fewer employ themselves in fishing, for which they have excellent opportunities. Their principal occupation is that of keeping petty shops in the towns of Crim-Tartary, where they are dispersed throughout the country; as leave of absence is readily obtained. The number of officers who rank with those of the army, and of the non-commissioned officers, is nearly equal to that of the privates.

The town of Balaklava is situated close to the harbour, along the foot of the mountain, but it is not provided with good water. As the port is deep, sheltered by lofty mountains, and contracted towards the sea, its waters are in general as calm as those of a pond, so that fishing in them is very seldom interrupted. Such port is frequented by fish of passage, especially by mackarels, and the *Mugil Cephalus* in great numbers; farther, by the red sea-mullet, or *Mullus barbatus*, which is one of the most delicate fish caught in the lakes of this country, whether it be eaten in a fresh or pickled state. Mackarels also become as tender and favoury as herrings, after being kept twelve months in brine.—The length of the harbour does not exceed one verst and a half, and its breadth is about two hundred fathoms. The entrance is very deep; yet, being confined within high rocks, its channel scarcely admits two vessels to sail abreast. Notwithstanding the apparent danger in entering this port, it afforded a salutary refuge to such vessels as were driven by storms against the Crimean peninsula, without being able to double the Cape of the Chersonesus. As, however, smuggling could not be easily prevented on account of the confined situation of the harbour, Government was at length induced, in the year 1796, to prohibit all ships whatever from entering it; because the mercenary Greeks readily encouraged illicit traffic, so as continually to expose this neighbourhood to infection from the plague:—in consequence of such exclusion several shipwrecks have already been occasioned. A small rivulet, proceeding from Kamara, and another brook arising from the western mountains, discharge themselves into the extremity of the haven.

The

The old fortrefs, like all the ftrong places of the Genoefe and Greeks in this peninfula, is erected on inaccessible rocks, clofe to the mouth of the harbour, on the adjoining eastern hill. It is fortified with high walls and towers. The perſpective view, given in the ninth plate, will afford a more correct idea of its fituation than could be derived from a detailed description. On the continued ridge of the mount, I met with a handsome but diminutive *Ornithogalum*, which has not occurred to me in any other fituation.

My next route was directed along the fouthern coaft of the Crimea, towards Kamara; becaufe the road leading over the mountains contiguous to the fea, between Balaklava and the neareft maritime village adjoining to Foros, cannot be eafily frequented. I commenced this journey on horfeback, on the fourth of April; when the peach, almond, apricot, and plum-trees were flowering in the gardens; while, in the woods, the *Prunus spinofa*, *Berberis vulgaris*, and the *Lantana*, only began to fhew their bloffoms. Among the herbs, I noticed the following: *Adonis vernalis* and *apennina*, *Fumaria*, *Alyffum montanum*, *Ornithogalum pilofum*, *Asphodelus luteus*, *Aſtragalus tefticulatus*, *Clypeola Johnthlaſpi*, *Geranium cicutarium*, *Taraxacum*, and ſome *Euphorbiæ*.

The diftance from Tſhorguna to Kamara is computed to be four verfts, over calcareous heights; and the buſhy hill on which the latter place is fituated, together with a Greek church, confifts of alternate beds of flag and limeſtone. After croſſing the mountain, and travelling along the dale of Alſſu,

we arrived at a low ground, between the eminences in the vicinity of the coast, whence we had an open prospect over the sea. On this spot, a tent was erected for the Empress when she visited the valley of Baidari, that separates the hills bordering on Balaklava and consisting of pudding-stone, from the next following mount composed of old grey calcareous rock, on which is again incumbent a fossil similar to the former. The rocky mountains, both from Balaklava to this valley, and thence to the village of Lafpi, form throughout a lofty and craggy sea-shore. We here met with primroses of every colour, though more rarely of a red hue; and, on entering the dale of Baidari, numbers of the *Alyssum clypeatum*, and a beautifully flowering *Orobus*, presented themselves at the sides of the road, which has been cut through the rocks with uncommon labour, but is at present in a very indifferent state. The *Alyssum montanum*, *Euphorbia Sylvestris*, and *Iris pumila*, were abundantly in blossom; but the *Asphodelus luteus* had not yet opened its buds. The hill last alluded to, is again parted from the high rugged promontory of *Ayadagh*, by an intervening deep valley, extending towards the sea. This cape projects with dreadful precipices, and has received the name of Sacred Mount,—probably from a Greek convent formerly erected on its summit, and the ruins of which are still discoverable. This morning being rainy, foggy clouds exclusively enveloped the top of such promontory; a circumstance which again suggested the remark, that calcareous mountains have the strongest attraction for vapours and mists. In the vicinity of this cape, violent tempests are said to prevail at sea, in all seasons of the year.

On

On surmounting the hill above mentioned, we enjoyed the prospect of the beautiful and romantic vallies of Varnutka and Kutshuk-Miskomia. They represent as it were the vestibule of the more extensive plain of Baidari ; being separated from the latter only by a narrow ridge, which, proceeding from the assemblage of rocks along the coast, not unlike a regular wall, terminates towards North-east. Our wretched horses could scarcely climb up this rocky eminence, on which the road is uncommonly bad and difficult. At length, after passing through continued woods, we arrived towards evening in the village of Baidari, from which the whole dale has obtained its name.

This pleasant valley was formerly granted to Prince Potemkin, and has been greatly praised by all travellers, especially by Lady Craven, the present Margravine of Anspach. It presents, indeed, many charms to persons who have not visited Siberia. I must confess, it did not produce a similar effect upon me, who was accustomed to survey in that country landscapes and prospects of a more extensive and majestic nature; nay, even the vales of Caucasus far surpass this celebrated spot. It is, however, more remarkable on account of its singular situation ; being an extensive, oblong and hollow valley, upwards of sixteen versts in length from South-west to North-east, and from eight to ten versts in breadth. On its southern side, it is bounded by the woody alpine terrace of the rocky wall proceeding along the sea-coast ; towards the East, by the steep border of the Yaila of Uffundshi, which here presents the lofty mount Tolaka, and likewise by a few other ridges consisting of rock ; on its northern side, by similar ridges and eminences,

that separate it from the dale watered by the brook Ufenbakh, as well as from the woody mountains of Kokulos and Aithodor; lastly, on the western side, by the above-mentioned ridge towards Varnutka. The central part of this large valley is hilly, and well provided with wood: from its hollow grounds, the springs, brooks and ditches collect their waters into the Kafikly-Ousehen; which, by means of a narrow valley in the vicinity of Tshorguna, opens itself a passage towards the North-west, where the mountains are more disfevered, and less elevated. Beside the detached villages of Varnutka and Kutshuk-Miskomia, the dale also contains those of Kaitoo, Baidar, Safftik, Kalendé, Beeyouk-Miskomia, Tylü, Uirkufta, Baga, Uffundshi, Savatka, and Skelä; which are collectively inhabited by at least seven hundred families of turbulent Tartars. Luxuriant woods, consisting throughout of umbrageous trees, cover this extensive tract, excepting in such open parts as have been converted into arable land. Excellent oak-trees still occur here; though, during the late war with the Turks, the best timber for ship-building was carried off, in order to supply the Russian fleet stationed in the Black Sea. The walnut-tree likewise prospers uncommonly in this, as well as in the vale of Shulü, and in all the southern vallies environed by mountains, where the oldest and most bulky of these trees are to be met with. In the village of Uirkufta, there is one particularly celebrated: it stands in a garden, is of prodigious extent, and has in some seasons been productive of from eighty to one hundred thousand walnuts. I also possess a similar tree of considerable size in one of my gardens at Shulü. On the whole; their dimensions can be compared only

only with those of the noble oak ; and the largest of the latter, in the whole Crimea, is probably the tree standing in the park of Admiral de Ribas, on the banks of the Belbek, near the village of Beeyouk-Syürehen *.

On the fifth of April, I departed from the valley of Baidari, in order to proceed over the lofty ridge of mountains towards the sea-coast. We rode in a southerly direction between a hilly tract connected with mount Tshuka and mount Sinor, ascending the eminence, which is thinly covered with wood. No other fossil occurred here, excepting the marmoraceous limestone in detached, irregular layers, which are pervaded with clefts. Although the morning was charming, and the atmosphere about the hills apparently serene, yet flakes of snow fell around us, on the top of the mountain over which we travelled. From an inconsiderable elevation of the rocks towards the North, the whole valley could at once be surveyed. In front, however, we were surprized with a terrific view of the open sea, beneath extraordinary rocky precipices, upwards of one hundred fathoms high ; and which form the continuation of those mountains along the sea-coast, commencing from the village of *Lafpi* †. A dangerous winding path leads down the

* The trunk of this oak is, at the root, where it happens to be somewhat decayed, twenty-five feet three inches English measure in circumference ; and, at about six feet above ground, where it is in a healthy state, not less than thirty feet. The height of the stem to the first branch is eleven feet eight inches ; and its shade, at noon, spreads around a circle of one hundred paces.

† *Lafpi* is a modern Greek term, implying dirt, or a morass. Most of the Tartar villages, situated along the southern coast, still retain their Grecian names ; having in former times been chiefly inhabited by Greek families.

steep woody declivity, from which a collateral road is made through a rocky hollow ground on the right, proceeding to the village of Phoros, which signifies a market. The horses bred in the environs of Baidari, and other mountainous countries, are so accustomed to steep rocky paths, that a person may implicitly trust to their sagacity, and their bridle may be slackened in the most hazardous situations. Even pack-horses, that generally precede, require no guide or leader, and never mistake the abrupt and difficult turnings from one precipice to another; so that they are not easily diverted from their usual steady course.

About half way up this eminence, where it forms a kind of terrace, I discovered a change of sandy schistus; and, lower down, ferruginous layers towards the village of Pshatka, to which our route was directed. In the pasture grounds of such fossils, the goats had left no other plants but the large *Euphorbia myrsinites*, that usually flowers in the month of March, and often produces more than twenty luxuriant stalks between the rocks.

Near the Tartar village of Pshatka, or Mshatka, there appeared strata of a spotted sandy schistus, or a species of wacca not unlike porphyry. Below this place, or on the declivity towards the sea, we met with fine orchards, which are watered by a spring rising, and enclosed, in the village. A large rough *Ranunculus*, and tall primroses, both contributed to diversify the verdure; and I also noticed an early-flowering *Sisymbrium*, that greatly resembles the *Alliaria*, but is destitute of smell. Several olive-trees, formerly planted by the Greeks, are still thriving here, and are well adapted to this climate.

After

After many dangerous turns, the path now takes an easterly direction along the lower part of the craggy declivity, at some distance from the high rocky mound, which is composed of limestone, and proceeds in a regular series, though at different degrees of elevation. Shortly, however, we arrived at a crest of rocks projecting into the sea, and formed of brown argillaceous schistus. In a few detached situations, there also occurs a sandy schistus, the layers of which seem to extend rather to North-west and South-east, inclining somewhat steeper than to an angle of forty-five degrees, and terminating abruptly towards North-east. But, in front of Pshatka, their declination in general is North by East.

The next Tartar village along the sea-coast is Mukhalatka. Its distance from Lafpi and Foros is computed to be fifteen versts. Among the stones, which the natives of this place employ for partly raising the walls of their huts at the side of mountains, I met with two specimens of quartz containing large cubes of field-spar; but I could not learn from what quarter they had been obtained; nor have I ever observed a similar fossil appearing on the surface of any hills in the Crimea.

Beyond Mukhalatka, we met with a layer of grey sandy schistus; and, on advancing farther, with a thick laminated free-stone, which takes its direction nearly East and West, similar to most other calcareous and schistous strata that terminate abruptly. Near a place, in the Tartar language called *Alafma**, there commences a vertical bed of a friable black clay, in which we observed alternate layers of iron-ore and

* This term is probably derived from the Greek word *κατασμα*, or Destruction.

ferruginous schistus. Here, probably, a disruption of the mountains formerly took place along the sea-coast; and it is to be apprehended, that successive revolutions will happen within the bowels of the earth, from this argillaceous mass; on which the narrow path dug on the steep declivity, especially about the trenches made by torrents, is extremely dangerous. During the fall of snow and rain, to which we were now exposed, the road was rendered so slippery, that our horses could advance only with the greatest difficulty. Such layers of clay extend to the breadth of at least three hundred fathoms. They are again succeeded by strata of limestone rock, which are variously interspersed either with schistus and clay similar to the former, but frequently containing veins of iron ore; or, lastly, with a sandy schistus, partly of a soft, and partly of a solid consistence. In a few places, we met with argillaceous beds several fathoms in thickness. These are throughout interposed with thin lamina, or layers of sandy schistus, between which the clay is from a few inches to one arshine thick. After travelling a short distance, we crossed the fine brook of *Dafta-su*, flowing into the sea through a deep broad glen; and on the banks of which the limestone rock re-appears. The very lofty mount, whence the assemblage of rocks begins to rise, is called *Mortsheka*; and at its western extremity, there is one of the most dreadful mountain-paths leading down to the village of *Skelä*, in the valley of *Baidari*. This passage is by the Tartars called *Merduen*, or *Stair*; by the Russians, *Lessinka*; and its course may be distinctly seen to extend along the abrupt declivity. The form of the rocky terraces, which in some places appear to have been improved by human labour,

resembles that of steps. They are extremely dangerous to descend, and can be mounted by horses only with the greatest difficulty.

The road from the banks of the *Dafta-fu* to the village of *Kutshuk-koi**, is intersected by several hollows, or deep glens, the humid soil of which was uncommonly slippery, and consisted of a crumbling, often ferruginous clay. We arrived there during a shower of hail; and a cold wind, that blew down the mountains, rendered our sensations very unpleasant.

Kutshuk-koi is a remarkable place, both on account of the subterranean convulsion that happened here in February 1786 (of which I have already given an account in my "New Northern Contributions," Vol. I. p. 258, published in the German language); and as it serves to explain those confused disruptions of mountains, which are very evident in many parts of the southern coast of *Crim-Tartary*: nor can I persuade myself that the event above alluded to, is likely to be the last of this nature occurring in the peninsula.

The village was situated at the steep foot of the mountains, nearly four hundred fathoms from the lofty assemblage of rocks accompanying the coast; and at a similar distance from the sea, on the bank of a deep glen that was connected with another extending farther downward in an easterly direction; and both of which, by the conflux of four springs, formed a rivulet that flowed along a steep shore into the sea. The soil between the hollows consisted of laminated clay, and a bituminous clayey, or black sandy schistus, that breaks in large

* This term literally signifies "Little Village."

flat masses; though a few crests of calcareous rock occasionally projected through the other fossils *. According to the accounts given by the aged inhabitants, a vehement earthquake, which occasioned disruptions in several parts of the mountainous coast, was perceived in these environs about fifty years since; and it is worthy of notice that, at the time of the late sinking of the ground at Kutshuk-koi, violent shocks of the earth were experienced in Silesia, and especially in Hungary.

On the tenth of February 1786, the surface of the earth about the deep glens before mentioned, and in another still farther eastward, began to burst, and to exhibit rents or clefts; so that on the same day the brook, which had hitherto turned two small mills constructed by the native Tartars, entirely disappeared. Two days after, the soil having become more disengaged, and the frightened inhabitants of the adjacent village having removed their cattle, carried off their effects, and abandoned their habitations, the whole tract between the hollows above described, from the lofty bank of rocks to the sea-shore, fell in about midnight with a dreadful noise; and this sinking continued till the twenty-eighth of February, so as to occasion a terrific abyss from ten to twenty fathoms deep; in which only a large parallel ridge of hard rock, and two

* It is much to be regretted that the author has not more distinctly expressed himself on this, as well as on many other occasions: for the original text in German, is so enveloped in parentheses, and the construction of his periods is, in general, so distorted, that the sense can often be collected only from the preceding or subsequent narrative. Sometimes, however, his singular phrases and expressions are totally irreconcilable to the German idiom: even the French edition deserves little credit, either for accuracy or elegance of diction, so that it has afforded no assistance to the English *Translator*.

smaller crests remained projecting at the bottom. The ground, thus fallen, extends to about nine hundred fathoms, or nearly two versts, in length, and from three hundred and fifty to five hundred fathoms in breadth. In proportion as one part of the steep declivity was detached beneath the rocky bank, the whole mass pressed downward; and the strand was removed farther into the sea, to a distance of from fifty to eighty fathoms. In the night preceding the twenty-eighth, two slight shocks of an earthquake were perceived; after which the waters of the rivulets that formerly vanished, again commenced to flow on the surface, but in a very different direction; previously forming various small ponds and fens in the hollow places, and in the new strand. It has not however been ascertained, whether the main tumbling of the ground was accompanied with an earthquake, as the Tartars were too much alarmed to make such observation. The stone beds of the sunken territory, and the fruit-trees that formerly stood in orchards, were thrown together in the greatest confusion; and a few scattered trees are still observed to project through the mass of ruins. Beside the two mills already noticed, this scene of destruction comprized eight dwelling-houses with their court-yards and gardens, as well as orchards and corn-fields belonging to thirteen other Tartar families. The springs now flow in two distinct branches through the deep glens lately formed, and which are still destitute of verdure. In places where the soil has remained on the surface, the inhabitants have again ploughed the land, and divided it into fields. On the borders of such hollows, the ruptured limestone rock projects in every direction; and the central ridge between them consists of a more solid bed of the

same calcareous fossil which was not rent; though it is likewise in a very disordered state. The fallen or disordered earth itself exhibits a black sandy schistus in large flags, which had probably been interspersed with clay. On the whole, it may be rationally conjectured, that part of the powerful springs arising below the lofty bank of rocks, had long since penetrated through the deep argillaceous strata; till the rivulet, which formerly flowed on the surface, had, in its subterraneous progress along the steep declivity, still more softened the clay in its neighbourhood, that was already excavated. Thus it happened, that the whole mass of the incumbent harder minerals could not fail, partly to slide down the mountainous height toward the sea, and partly to sink on the spot to a considerable depth.

At the same time, when this catastrophe took place at Kutshuk-koi, a steep cape, projecting into the sea between Kutshuk-Ofen and Kuru-Ofen was likewise thrown into confusion; an event, of which I shall speak in the sequel. I shall farther shew, in describing other regions of the southern mountains in the Crimea, that many extensive devastations have been occasioned merely by springs undermining the sides and bottoms of steep eminences; and that they are not, as others have supposed, the effects of volcanos. — In the primitive ages of the world, when all the hills were much higher and steeper, and the sea spread its waters to the foot of such eminences, it must have necessarily followed that the floods, as well as the streams or rapid torrents, which flowed in cascades from those elevated precipices, were still more powerful, and occasioned almost incalculable disruptions and sinkings of mountains, before the surface of the globe had acquired its present form.

The

The village of Kutshuk-koi is now situated, together with other dispersed dwellings, contiguously to the western border of the funken territory; and the road passing over that edge is extremely difficult. The next village along the coast is Keekenice, scarcely five versts distant from the former. On the mountainous side, we met here, and likewise in our progress, with the *Pyracantha*, which the Tartars denominate *Shaitan-Teken*, or Devil's Thorn, in uncommon abundance; and its flat expanded branches cover large spots of ground. The turpentine-tree, various species of wild fruit-trees, the native vine, *Fraxinus ornus*, *Celtis*, *Diospyros*, *Lotus*, and *Juniperus Lycia*, begin frequently to appear among the woods; a few beautiful *Orobi* flowered already in April, and presented agreeable vernal plants. The continued rocky bank, which forms the uppermost hilly border, in some parts apparently constitutes the fifth, in others the fourth part of the whole elevation. Beyond such bank, the mountains decline steeply towards the sea, exhibiting in some places rocks, and, in others, a mingled mass of fragments, forming terraces covered with verdure, as well as occasional precipices. In many tracts there is a narrow strand, or extensive level shoals proceed from the lowermost rocky part into the sea; though, in other situations, the coast also consists of steep rocks. Large masses of the latter are occasionally precipitated, especially where the hard layers are undermined by springs, or where the rocks happen to be more than usually rent; so as to become separable by heavy showers of rain, or by the effects of frost.

In the vicinity of Keekenice, no other fossil occurs, except the grey sandy schistus of various degrees of thickness, and the

flight

slight grey calcareous rock, in masses forming bulky strata. At a short distance from this village, we arrived at a deep glen, in which we crossed a brook, called by the Tartars Choris-Ousehen. Here the rocky mountainous bank, after proceeding without interruption to the length of more than twenty-two versts, suddenly declines; and is then again connected with its farther and more easterly continuation, by means of two distant rocky precipices, one of which is said to be perforated. A tolerably convenient passage, called *Eskee-Bogas*, or the Old Opening, leads over the mountains situated along the shore. Most of the clefts in the free-stone schistus, which presents itself here, as well as in the course of our road, are incrustated with fine quartzose crystals. We met with a considerable stream, termed Booyouk-Ousehen, which descends over small cascades into another deep glen, where the schistous clay again occurs; but at one side its layers abruptly terminate towards the South-west, and are interleaved with lamina of sandy schistus. As the lofty bank of rocks begins at *Eskee-Bogas* to withdraw progressively farther from the sea, there appear on such declivity fine coast-lands, which afford excellent fields for the culture of flax and wheat; though such grounds might likewise be employed for raising vines and olive-trees. They are situated beyond another hollow glen, by the Tartars denominated *Beeyouk-Khuris*.

The succeeding village of *Leemena* lies somewhat higher up the mountainous declivity; and the road conducting thither is so rocky, that a path made at the lower part of the sea-coast, is preferably frequented. This path exhibits a great variety of mineral congeries, abounding with veins of spath and quartz.

Among them I also remarked a substance resembling lava, the cavities of which were filled up. The shore itself, however, is to a considerable distance composed of free-stone mingled with quartz. Next in order, a capacious promontory, consisting of a grey calcareous rock (emitting a fetid smell on friction), projects and terminates near the sea with a rugged, inaccessible, and detached lofty rock; the upper surface of which is almost level, but declines toward the East; being fortified with a transverse wall. On this rock, I saw for the first time that elegant tree the *Arbutus Andrachne*, displaying its beautiful foliage, with its branches and trunk of a blood-red colour, though it stood at some distance, on an inaccessible height. Immediately behind the cape, contiguous to the sea, appears a craggy rock of a similar kind: in front of which is a shelf of a whimsical figure, and between them projects a pointed rock, not unlike an arrow. To the highest part of the rocky eminence, one side of which forms an impending precipice, there is attached a wall two arshines in thickness, having a stone front, but being internally filled up with lime and coarse sand. This fort is by the Tartars called *Tshiva*; and the former one, erected on the large rock, is termed *Iffar*. Only a narrow and very dangerous path leads to such fortified cliff, along a creek bounded by the same rock towards the East. Another bay, with a like shore, occurs between the latter and the western promontory. The road, passing over barren rocks, is far from being safe. — A species of *Helix*, with circumvolutions to the left, and seldom found in other parts of the Crimea, was here very common. I likewise met in these environs, and as far as Simäus, with the *Convolvulus Scammonia* thriving between the
rocks,

rocks, and producing roots equal in thickness to a man's arm; though such plant is said to grow abundantly in Anatolia, where it has received the name of *Mamutia*.

Immediately behind these rocks, we arrived at a level ground, on which we noticed the foundation of a very ancient building, divided into different squares, and erected of large coarsely hewn free-stones. Adjoining to such ruins, there is a hollow glen, where a fragment of a white marble column, about a foot in diameter, remains on the ground; and from which the superstitious natives occasionally break off pieces for internal use. — Next follows an excellent spring, which the Tartars distinguish by the corrupt Greek name of *Agi-panta*, or All Saints. At a short distance from such fountain, and thirteen versts from Keekenice, we reached the village of Simäus, situated in a delightful valley; where a number of old olive-trees occasionally disposed in rows, and likewise numerous pomegranate-trees, are interspersed between excellent orchards. The terrific view of the rocky banks facing the land-side, and the prospect of the open sea, render this charming vale more interesting than it appears to be from the delineation given of it, in the eleventh plate.

The Tartar mountaineers of the three villages of Keekenice, Leemena, and Simäus, have a strange physiognomy, different from that of all the other inhabitants of Crim-Tartary. Faces of an uncommon length, as well as arched noses exceedingly long, and high heads compressed with a view to render them unusually flat, all contribute to produce diversified caricaturas; so that the greater part of these persons have distorted countenances; and the least deformed resemble the



the figures of satyrs. Professor HACQUET, to whom I communicated this remark, during his residence in the Crimea, directed my attention, in one of his subsequent letters, to a passage contained in Scaliger's works *; and which may probably relate to the peculiar physiognomy of the people inhabiting this part of the coast. "The Genoese," says the writer last mentioned, "had adopted from the Moors, their predecessors, the custom of compressing the heads of newborn infants about the temples: thus it happens, that their children, both in head and mind, resemble the genuine Therfites; though such practice is now discontinued." — I shall not attempt to decide, whether these villagers, with their singular faces, are the remaining descendants of the ancient Genoese who inhabited the Crimea, or those of any other nation that had retired hither; taken up their secluded abode among the wildest rocks of the southern coast; and thus, notwithstanding the lapse of time, preserved their extraordinary visages. (The reader is, on this occasion, referred to the second figure in the twelfth plate.) It is farther remarkable, that the hair and beards of such mountaineers are almost uniformly light brown, reddish, or even flaxen; a circumstance seldom occurring in the Crimea.

On the other hand, it is certain that all the inhabitants, who at present occupy the villages situated on the southern coast, though regarded as Tartars, are nevertheless the off-

* Scaliger, in *Commentar. sup. Theophrast. de causis plantarum, Lib. V. p. 287.*
 "Genuenses, cum a Mauris progenitoribus accepissent olim morem, ut infantibus recens
 natis tempora comprimerentur, nunc, absque ullo compressu, Therfiteo et capite et animo
 nascuntur."

spring of other nations, who had either landed here, or had been driven thither from the interior; and who were strangers to the Tartar race, but especially to that of the Mongoles: hence the original natives of Crim-Tartary consider them as aliens, and point them out by the contemptible name of *Tat*. The valley of Simäus is enclosed on its eastern side by a promontory called *Crotis Burun*; from which we enjoyed a prospect over the dale that was peculiarly charming. The water of the spring, rising in this village, is slightly chalybeate; and the calcareous rocks, which are scattered in fragments, as far as the vicinity of dwelling-houses, consist of a very strong *Dysodes*, or fetid stone. Between two of such masses lying on the burying-ground, I took notice of two bulky trees of the date-plum, or *Diospyros Lotus*, by the Tartars called *Karkos*.

Behind the eastern cape above mentioned, we had a view of the lofty mountains that surround the remarkably warm valley of Alupka with uninterrupted banks of steep craggy rocks; and such promontory, being the most southerly part of the ridge, probably describes the *Κριῶν Μετωπον*, or Ram's Head of the ancient Greek navigators. The elevated western part of this line is, by the Tartars, termed *Skutan Kayassi*; the middle region, *Sahan Kayassi*, or the Hawk's Mount; and the highest eastern hill, *Pöter Kaya*, or with the Greeks *Ayee-Petra*, signifying Peter's Rock. Between the second mountain and the rocky precipice called *Keefel-Kaya* that extends to the *Pöter-Kaya*, there is a small interfection in the summit of the rocks, which has received the name of *Topek Bogassi*, or the Dog's Passage, through which a horse-road leads over the *Yaila*, or Alpine Flat,

Flat, both to Uffundshi, and Skelä. Another still more difficult path proceeds at the side of Peter's Hill, in a very steep direction towards Ufenbakh and Stilä.

On arriving at the top of Crotis-Burun, we could completely survey the enclosed valley of Alupka; and we distinctly perceived the warm air thence wafted to us, even in the cold weather of spring, when Peter's Hill was covered with snow that had lately fallen. Nevertheless, we were informed that sometimes, during the winter, cold northerly winds blow down the mountains into this dale, and produce very sensible effects.

The valley into which we now descended, abounds with springs; the first of those we passed bears the Greek name of Krotiria. We next crossed the extensive hollow ground, termed Kara-tepé, the soil of which is a black schistus. Its upper part is named Stavas, and affords a channel to the water of a considerable brook. In the dale itself, we met with a small spring called Mäka-Soo, and afterwards with a large brook flowing in cascades down the steep mountains; and which has received the semi-Greek name of Stauris-Ousehen, or Cross-Brook. The village of Alupka lies on its banks, close to the sea.

This village, with all its houses and gardens, as well as part of its arable lands, are situated upon and between prodigious fragments of rock, fallen towards the sea from a lofty bank; which extends, at a breadth of three hundred fathoms, to a distance of nearly two versts into the country, as far as the high terrace of the mountains. In the midst of this assemblage of rocks, there appears a grey or white-spotted, and sometimes greenish kind of fossil, resembling a serpentine-stone. It is

found in bulky, irregular masses, being generally of an oblong trapezoidal figure, or composing polygonal bodies that are frequently eight, ten, or more fathoms in thickness; and lie either scattered without any order, or heaped upon one another, as it were by the hands of giants. The largest collection of these masses occurs in the middle of the valley, approaching towards the sea, where we observed thick laurel-bushes growing between the rocks. It consists partly of the fossil last mentioned, and partly of a grey, somewhat fetid, limestone. Fragments of the latter kind, which principally compose the lofty mountains that present themselves, are dispersed on both sides, forming the eastern and western borders of this stony mass. Both species of rock are spread in detached pieces from the foot of the eminences, whence they have been precipitated to the edge of the water; and single blocks project over the surface of the sea in the form of shelves. In some places, we likewise met with masses of calcareous stone resembling marble, such as had formerly been broken, but were again combined by means of stalactite, though in a loose and porous state. A few of these bodies were spotted with red, and interspersed with spathose veins. On examining the low grounds, both to the East and West of the more lofty assemblage of rocks, they were found to consist of the same laminated clay, which is frequently intermingled with a harder schistus and ferruginous ore, like that I first remarked in the vicinity of Chalasma, and which has probably occasioned the dreadful catastrophe at Kutshuk-koi. Regular strata of this compound fossil also occur within, and contiguous to the sea, extending in a North-easterly direction, and inclining a little to the North-west, or towards the

the sea. Near a small source, they exhibit a saline incrustation on the lateral surface. The more powerful springs before mentioned, together with the brook Stauris, have excavated the broad valley of Kara-tepé on its western side; but the stratified beds, last alluded to, lie mostly in a state of disruption, as far as the narrow shore in front of Alupka, and appear in a manner slid down towards the sea. In an easterly direction, the very same schistus forms a large, semi-globular, hollow ground, in which numerous gardens and olive-trees are planted; and through which the rivulet Karakunga (that rises at the foot of the lofty ridge of mountains, between rocky fragments) discharges itself into the sea, by cascades. Behind this valley, towards the East, there follows another chain of detached high rocks, proceeding to the sea-shore; and along which the brook Haftagaya precipitates itself in powerful cascades, as it descends the foot of Peter's Hill.—Here the two bulky strata of schistus clay, between which the layers of calcareous rock, and a species of wacca resembling serpentine-stone, rested in a sloping manner, were gradually softened, partly by the sea, partly by the conflux of many springs and brooks already specified. Thus such fossils, being at length undermined by the water, were pushed down their steep declivities towards and into the sea; so that the downfall of the incumbent masses of rock, which remained without support, was necessarily occasioned.—Whoever may have an opportunity of examining with attention the environs of Alupka, and of comparing them with those of Chalasma and Kutshuk-Koi (which on a smaller scale greatly resemble the former), will readily agree with me in this conjecture.

As I have not met with the shirly wacca, above mentioned, in any other quarter of the Crimea, except in the valley of Alupka, this mineral deserves particular notice. The large masses of it, which serve, in different parts, either to form the back walls of houses attached to them; or to constitute part of enclosures, are variously mixed, and present a diversified texture. Some of the lumps appear throughout to be a coarse, yellowish-grey, or greenish serpentine-stone, spotted with white; others contain a large portion of lime, the particles of which cannot be discovered by the eye; others, again, are interspersed with grains of shirly spar, or almost entirely consist of the accumulated whitish fossil last mentioned, and are in a manner porous. Their colour depends on the various ingredients of which they are composed; though it is, in most instances, either light or dark grey. By the test of nitric acid, a slight effervescence takes place only in a few parts of this wacca. When submitted to an intense heat, its solidity is not materially affected; but, if plunged into water, while hot, it attracts such element with a strong hissing noise. The largest rocky masses of the same mineral lie below in the valley, mixed with smaller fragments, and partly covered with vegetable mould, which constitutes the soil of gardens. As we advanced from the low country up the mountainous path leading to Ufenbash, Stilä, and Mangush, we progressively met with a greater number of bare fragments, loosely piled one upon another, without exhibiting any earth or fertile spots between the rocks. On an eminence, which is tolerably covered with earth, and rises above the hollow ground overgrown with laurel-trees, there are about sixty-six
old

old olive-trees, being partly in detached situations, and partly disposed in rows. Here the *Ephedera monostachya* attains a considerable size. In the higher parts we noticed a whitish-grey lime-stone, which extends as far as the high rocky banks, and is in a similar ruptured state. After having crossed a deep glen, in which a brown ferruginous schistus and clay are mixed with iron-ore, we observed, on elevated ground, three large abrupt masses of calcareous rock, that appear to have been cast of one piece, and are nearly thirty fathoms high. Large trees of the *Pinus maritima* grow between the clefts of such rocks, at the foot of which the brook Karabunga rises out of a considerable heap of stones, forming a powerful stream; and precipitating itself through a hollow ground into the sea. We next arrived at a lofty terrace of the mountains, called Malaiya, and which is covered with marine pine-trees, spreading their flat heads over a large surface. Here likewise, the grey early Oak, or *Quercus Cerris*, abounds in every direction, and its branches begin to lodge on the ground.

Leaving this stony promontory, we descended into a deep valley commencing at the basis of the high rocky wall, where we discovered the source of another spring, termed Hastagaya. It rises with impetuosity; and, after making numerous cascades, often several feet high, flows through a broad glen, foaming towards the sea. On the surface of all the eminences, as well as on that of the lofty Peter's Hill itself, we perceived no other fossil than the hard, grey, and slightly fetid calcareous rock; which, throughout the whole chain of mountains, has no determined limits or strata; and, at the sides of the deep clayey glens, it every where exhibits traces of decomposition.

In

In the mountainous parts of this region, forests of pine-trees are frequently met with ; but their tops are mostly bent or inflected, except in low grounds, where the stems grow erect. The Tartars, however exert their utmost endeavours to eradicate such useful species of wood, by depriving it of its resin, setting fire to it, and by similar destructive means. The resin, extracted from this tree, affords an agreeable fumigation, not inferior to that of the mountain-pine, imported from Moldavia into Russia, for the same purpose. On the South side of Peter's Hill, the strawberry-tree, *Arbor Andrachne*, grows in a few particular places. The valley is one of the hottest along the whole southern coast of the Crimea : for, being open only towards the South, and sheltered from all cold winds, it receives the solar heat during the whole day. I experienced the effects of its situation, when I visited this dale in the subsequent summer, but especially on entering the deep glens consisting of black schistus. Here I sensibly felt the heat of the soil through the soles of my feet ; while my hand could not, for three minutes successively, endure the stones heated by the sun. Nor would it be possible to raise grain on the stony fields, which the terraces and mountainous declivities occasionally present, if the Tartars did not, in almost every direction, avail themselves of small veins of springs, with which they sedulously water their lands.

All the productions of the East, requiring a hot climate, would prosper here. Fig, pomegranate, and olive-trees, beside those planted in gardens, grow abundantly between the rocks,

in a native state; while the laurel-tree, every species of wild fruit-trees, the vine, the *Diospyros*, *Terebinthus*, and *Celtis* are most common in this valley. A few cypress-trees, the *Lauro-cerasus*, *Mimosa arborea*, the box-tree, and other plants, which have been introduced into this country from Constantinople, are in a thriving condition. No other precaution is taken for preserving a small orangery, than that of sheltering it during the winter in a Tartar hut, where such plantation is but indifferently protected from the cold. In no part of Taurida have I seen a greater number of old walnut-trees; many of their trunks being from three to four fathoms in circumference. Wild vines, as well as olive-trees, occur here, of an almost incredible size. All the indigenous plants, growing in the warmest regions of Crim-Tartary, likewise succeed in the dale above alluded to. The most common, however, are the *Rhus Coriaria*, *Rubus sanctus*, *Ruscus aculeatus*, *Cistus incanus*, *Alyssum clypeatum*, *Verbascum Græcum*, *Scutellaria Orientalis*, the remarkable *Trifolium subterraneum*; a spring violet bearing a high stem, and large white or light-blue flowers of a peculiarly sweet odour; the *Convolvulus Scammonia*, and several other plants of warmer climates. In the lower parts, where most of the laurel-trees grow, there is a pond among the broken rocks, the water of which has a dark-brown colour, and exhibits a singular incrustation. The soil around it is marshy; and the *Polypodium Europæum* delights in the mossy surface of stones. Between the rocks of the beach, I observed the *Crithmum maritimum*, which the modern Greeks still denominate Krithama. Scorpions and pilchards are alike common here, together with other small fish that frequent the vicinity

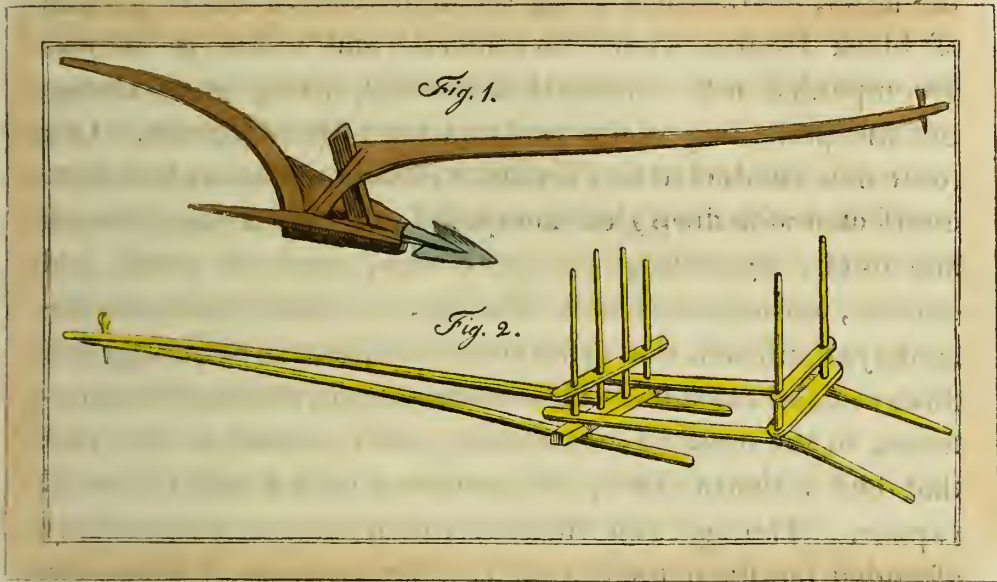
of shelves, and likewise very palatable crabs. The pilchards are caught either by means of a casting-net, which the French call *Epervier*, the Tartars *Satsma*, and the Greeks *Pesovolo*; or they are taken with the hand between the stones on the coast during the night, by the aid of flambeaux made of resinous wood.

Alupka swarms with numberless scorpions; though such reptiles seldom occur in other parts of the Crimea. In the vernal season, they may be found of different sizes, and beneath almost every stone of old walls, especially in situations where dung is deposited. They belong to the genus termed by Linnæus *Scorpio Carpathicus*. The largest kind of blue *Carabus* also frequently infests this place.

The Tartars in the vicinity of Alupka are distinguished by a peculiar physiognomy, nearly resembling that of the inhabitants of Simäus and Leemena. Their hair, like that of the latter, is generally of a light brown, or even flaxen shade; which is very seldom observable among the other natives of Crim-Tartary, including the Greeks and Turks. Being uncommonly swift in their motions, they skip in walking from stone to stone, like dancers. Their huts, similar to most of those on the southern coast, from Balaklava to the neighbourhood of Alushta, are generally erected against the rocky terraces, and partly hewn in the rock itself; having only two side-walls, and one in the front. The roof is covered with earth, and usually on a level with the terrace formed by the mountain; so that a person may easily pass from the one to the other. In the interior of such habitations, there is simply a spacious fire-place with a chimney; and broad cushions are placed along

the opposite wall, both for the purposes of sitting down and sleeping upon them. — The stony nature of their confined wheat-fields does not admit of using the large Tartar wheel-plough; instead of which, they employ a kind of crook, with a plough-share in the form of a spear, almost horizontally adapted to its wood, and directed by a lever about six spans in length; both being manufactured of the same trunk of an ash-tree. This wood is provided with two mould-boards, and connected with a beam twelve spans long, to which only two oxen are generally yoked. The whole implement is remarkably simple, and might also be advantageously employed in vineyards. It is by the natives called *Sabon*, and a representation of it is given in the eighth vignette, fig. 1. — In order to convey timber and fire-wood down the steep mountains, the Tartars make use of a peculiar sledge, termed *Khaafak*. It is also drawn by two oxen, and is delineated in the same vignette, fig. 2. — Their diminutive cattle are uncommonly active, being accustomed not only to trot like those bred in the environs of Caucasus, but also to climb up and down the rocks, in the manner of mules. Few horses are kept by the Tartars inhabiting the mountains: though of a small size, they are very hardy and sure-footed. On the contrary, they possess numerous herds of goats; many of which are black, but their faces, legs, and bellies, of a fallow colour; others are altogether fallow, or brown-red. Their sheep, as well as the goats, are small, with fat short tails; having naturally fine fleeces, that are sold at much higher prices than the wool obtained from the sheep reared on the steppes; and which might be easily carried to the highest degree of perfection, by the introduction of Spanish

rams. These remarks may also be applied to the other inhabitants of the southern vallies, who are not distinguished by those peculiar features above described, but are a handsome and cheerful people, as will appear from the second figure of the twelfth plate. The latter, indeed, are descended from a very different race of men; and their dialect also deviates, in some respects, from that spoken by the Tartars, who dwell on the northern declivity of the mountains, and in the adjacent dales.



As I have several times been in Alupka, and have returned thence over the mountains, by different roads, I am induced to describe two of them ; in order to present a more accurate knowledge respecting the nature of these eminences. There is a third road leading due North by Kutshuk-Ufenbakh and Stilä, but which I have never frequented : the two others take a more westerly direction. I performed my first journey in the month of April immediately after a violent tempest proceeding from the sea, and followed by heavy showers ; which still concealed the lofty regions in the clouds. The road I then preferred, directly after leaving the village, passes between numerous fragments of stone, obliquely North-west, up the steep

steep mountains, along the deep glen of Kara-Tepé, which is enclosed with the broken calcareous rock ; and, after crossing the latter, we travelled along the more western hollow ground of black schistus above mentioned, and which is likewise accompanied with a natural stone-wall, rising progressively, but still presenting a few fields on the hilly declivities. Our route now conducted us over other calcareous rocks, that were intersected with deep glens composed of schistous clay, through fine forests abounding with pine-trees, most of which had circular, umbrageous heads. Farther, we crossed the brook Sahankaya-Ousehen, that arises from a confluence of springs, and flows in small cascades. Here we advanced, during a thunder-storm, in the midst of low clouds ; and, instead of the rain that had hitherto fallen, we perceived only a mist or humid vapour. Through this clouded atmosphere we progressively ascended the steep rocky path ; in the environs of which the pines were succeeded by the common oak, the linden-tree, and the trembling poplar. At length, after riding through a wide and deep valley consisting of black schistus, and overspread with calcareous fragments of a prodigious size, we arrived at the highest lime-stone rock, that stands singly, exhibiting several dreadful precipices on its south-western side. While we travelled beneath the latter, during rainy weather, large masses were detached and precipitated in various directions, so as to expose our lives to imminent danger ; till we passed through the defile between the rocks, termed Topek bogassi, in order to reach the alpine flat or Yaila.

On this occasion, I cannot omit to mention a phenomenon which happened, both during my present, and in the subsequent

quent summer journey. Every time I passed the lofty rock last alluded to, during a violent tempest, the clouds, proceeding from the sea, were attached to it in two volumes, totally distinct from each other. While it rained in the lower regions, we perceived in the first section of clouds only a wet and cold mist. On ascending this column of vapour, rain again fell from the upper clouds that enveloped the summits of rocks, and frequently settled on the Yaila, in the form of a thick fog. Now, the lowermost volume, when viewed from the eminence, resembled a white undulating sea, and obscured the whole prospect of the subjacent country. Dreadful thunder and lightning occasionally issue from the upper division of the clouded atmosphere.

The Yaila, which I have repeatedly mentioned, and which we reached immediately after passing the defile between the lofty crest of rocks, represents an immense alpine flat, well covered with verdure; diversified partly with rocky terraces, partly with concave grounds; and inclining here towards the North-west. At so late a period as the month of June, all the hollow places, as well as the cavities beneath the terraces, contain large quantities of snow; which usually remains on the plain itself till May. Various species of *Crocus*, the primroses and other plants, which in different parts of the Crimea flower in the months of January and February, do not unfold their blossoms here till the latter end of April, or even in May. Among the plants occurring on the northern declivities, I particularly noticed the *Draba pyrenaica*, *Androsace Chamaesyce*, *Gnaphalium supinum*, *Veronica orientalis*, *Polygala Schreberi*, *Iberis saxatilis*, *Pedicularis tuberosa*, and other alpine vegetables.

vegetables. A few rocky eminences occasionally appear on this plain region. In some parts there are gulfs or pits, not unlike large fountains, or subterraneous wells, in which the accumulated snow of several years remains during the whole summer, and by its gradual dissolution supplies latent springs. More frequently, however, we met with shallow trenches formed by torrents, and vallies (often without any place of egress) with different angles, and circular depressions of ground, becoming progressively deeper, more extensive, and being covered with wood; among which the white beech, oak, and numerous lofty bay-trees are the most conspicuous. Through one of such vallies, the road leads to Uffundshi, whither we were obliged to descend a stony hollow ground, overgrown with juniper-trees; and on foot to conduct our horses by the bridle; as the road was so steep, that the animals could not support themselves in an erect posture. The distance from Alupka to Uffundshi, crossing the Yaila in an oblique direction, may be computed at nearly thirty-five versts; and from the latter place to Skelä, one of the most beautiful and pleasant spots in the valley of Baidari, about five additional versts; farther, to Baidari itself, six versts; and thence to Tshorguna, by the way of Alssu, being the most direct horse-road, it is only fourteen versts.

On crossing the Yaila in a due northerly direction, the distance from Alupka to Kokos is about thirty versts. The latter is a large and beautiful village on the banks of the Kabarta. There are two ways leading to this place, either through the next valley of Gaspra, or by ascending the road already mentioned, though Topek-bogaffi, or Simäus-bogaffi. Here we met with

with a good horse-road over a level tract of the Yaila ; having a soil of reddish loam and coarse gravel, which has apparently originated from the decomposition of the ancient lime-stone rock. After travelling about four versts, the plain becomes diversified with rocky terraces, the upper strata of which consist of calcareous marl, and incline towards the North. Scarcely eight versts from the southern border of the eminences, we reached the extensive and woody dale, watered by the river Kabarta. After descending a steep and narrow glen, through which the brook Kuru-Ofen takes its course, we passed through a series of dark forests ; where I occasionally observed the *Sorbus aucuparia*, *Cratægus torminalis*, as well as the common pine-tree, which seldom occur in other parts of the Crimea, and likewise the common *Cypripedium*. Next, we were obliged to cross the brooks arising from the springs of the Sibrikaya-Ousehen, over the most difficult paths, and to pass through an extremely steep, dark valley, covered with wood, and deeply excavated between rocks. On its western side, this dale is bounded by the lofty precipices of Sibritash and Daviltsha ; and on the right, by the vast, abrupt mount of Boika ; while, at its lowermost part, the Kabarta itself flows with a violent noise, in numerous small cascades. Near the handsome village of Kokos, however, the vale becomes more open, and affords the most charming views of the mountains. Towards the South, we enjoyed the prospect of an extensive plain, as far as the rocks of Sibrikaya, Sidam, and Daviltsha. To the west of the river, we saw, in a southerly direction, Mount Boika, of which a large portion was, several years since, precipitated into the Kabarta ; so as to impede its course for

a considerable time. In the north-eastern quarter we descried the long ridge of Booyouk-Kayaffi ; and, lastly, to the North, in front of the open valley, appeared the lofty hill called Ayee-George ; which must be classed among the more recent cretaceous lime-stone heights.—The Tartar inhabitants of Kokos have acquired opulence, by trading in timber, and in such wood as is fit for agricultural or domestic implements ; both are slid down the terrific, steep eminences into the vales, by means of the instrument or sledge above delineated. They dwell in neat cleanly houses, and cultivate fine gardens. Memetha Bey, Counsellor of College, and proprietor of this village, which is the largest in the whole peninsula, here possesses a well-built mansion and a harem, in the Turkish style, together with an excellent mill.

Below Kokos, where the road leading to Bakhtshifarai crosses the river Kabarta, the ancient brown schistus extends in a direction from East to West ; and abruptly declines, in one place towards the South, in another to the North, at equal angles of forty-five degrees. On following the course of the Belbek, we perceived, near the village of Fotufala, or Fotfala, the white recent calcareous mountains directly before us ; and, on proceeding thence to the left, or taking the western road to the village of Shülü, we travelled in a continued valley, which distinctly separates these accumulated calcareous, marly heights from the more ancient and level mountains. The former is throughout lofty and dissevered, extending in the direction above described ; while the latter consists, in this neighbourhood, of smaller and less abrupt hills abounding with wood, and partly composed of lime-stone rock. In travelling

travelling through the valley last-mentioned, and that opposite to it, we could clearly trace such mountainous division to the distance of twenty-five versts, till we arrived at Shülü.

In order to return to the description of the southern sea-shore, and of the contiguous ruptured mountains, it ought to be previously remarked that, in proportion as the coast beyond Alupka takes a north-westerly turn, the eminences, and especially their rocky summits, become more distant from it; being at least three or four versts from the sea, towards which they form extensive, though likewise rocky and mountainous, declivities. By this change in their position, the strata of the hills begin to appear more distinctly in their sections along the coast.

The road from Alupka to Yalta, a distance of fourteen versts, leads first through the large and deep circular valley of the brown schistus above mentioned; which, being watered by the brook Karakunda, is embellished with orchards, and particularly with olive-trees. This dale is separated from another composed of the same fossil, by a small ridge termed Ayee-Vlafs, which is covered with broken fragments of calcareous lime-stone. The latter of these vales is intersected by the rapid brook Hastagaya, or the Painful Stream; which name has been given it, in consequence of the floods that frequently carry off cattle, and dash them with fatal violence against the rocks. The same rivulet also turns a few Tartar corn-mills.

The next in succession is a more lofty ridge, exhibiting a decomposed lime-stone rock, and projecting into the sea, with

a cape called Dermen-Burun. After crossing such ridge, we entered an extensive, round and deep valley, the excellent soil of which deserves to be employed for the culture of vines and olive-trees; though the Tartars have converted it into fields and wretched gardens. However neglected their orchards are throughout the valley, they still afford a delightful prospect, when surveyed from a central hillock situated in the vicinity of the sea; and which likewise consists of the decayed calcareous rock. At the same time we had a view of three Tartar villages; namely, Missokhor, or Müskhor, on the west side; Choriss towards the North, or within the country; and Gaspoorra, or Gaspra, to the East. Old and young pomegranate-trees, as well as fig, olive, and laurel-trees singly scattered over this valley, all prove its favourable situation for every vegetable production requiring a warm climate.—The lofty mount of St. Peter now presents only its declining edge; and the more distant high bank of rocks disappears behind the lower mountains that are covered with wood; and the base of which also extends, so as to form a rocky shore.

Behind Gaspra, where some vestiges of a Greek church, erected of wood, are still discoverable, we met with a considerable woody mountain, which the Tartars distinguish by the semi-greek name of Kutilln*-surimlaré. Its central part consists of the marmoraceous lime-stone rock, which forms the upper part of the hill; being disposed in thick layers, abruptly declining towards the North and North-east, at an angle of forty-five degrees. To both sides of this fossil, either West or East, less bulky and often very thin strata of a schistous sand-

* *Kutilln*, in modern Greek, signifies a Spoon.

stone are attached in the same direction as the former. A spring, which flows down the mountain, completely divides the horizontal bed of sandy schistus from the calcareous rock.

The scene, however, now begins to exhibit very frequent changes. Immediately behind the hill just described, there appears the woody promontory of Ayee-Thodor, or Saint Theodore, which extends between deep glens also overgrown with wood, till it terminates in the sea with a rugged point. Very extensive beds of oysters are found in its vicinity, at a depth of from thirty to forty fathoms; and the Greek inhabitants of Outka usually dredge for these shell-fish. — Ruins of a monastery are said to be still perceptible on this promontory, as well as on the upper part of St. Peter's Hill.

The next lofty mount is denominated Murgundunoo-Kayafé. It terminates towards the sea with steep rocks, on the sides of which the strawberry-tree grows in abundance. — After this follows a craggy hill, separated from the mountainous ridge, surrounded with woods, and termed Kanghai, or Ranghai. One of its detached rocks represents a colossal figure. The steep sides of this mountain are covered with black juniper-trees, the trunks of which are from two to three feet thick: their wood, possessing the fragrance of that of the cedar, is by the Tartars called Samla-agatsh. Farther, the most elegant groups of strawberry-trees, with a blood-red bark and numerous clusters of white flowers, embellish those precipices as far as the highest rocks, and produce at some distance a peculiarly charming effect. Many stems of the latter, springing from a single root, frequently attain to the thickness of a thigh, and the height of two or three fathoms; but their fruit is, in

the Crimea, uniformly small, and rather insipid. About the end of April, the strawberry-tree begins to display its blossoms on the extremities of the branches, between its beautiful ever-green foliage: toward summer, the blood-red colour of the smooth stems and twigs gradually assumes a dusky green or brownish shade. The wood, felled during the winter, is of a pleasing red hue; and, when employed in veneering, nearly resembles rose-wood.

Somewhat farther, in an eastern direction, we observed, on the right, towards the sea, a fortified rocky hillock situated in a wood, and the more exposed parts of which are provided with walls erected of loose fragments of rock. A very narrow path, formed partly by art, conducts to this eminence: on the top of it large masses of blackish *Dyfodes* are confusedly thrown together, so as to leave considerable crevices or interstices between them. We perceived a current of cold air issuing through one of the clefts, which is remarkably wide: it is said to emit vapours during the Winter; and may probably communicate with the sea. Shepherds assert to have seen inflammable air, or flames, ascending thence, and therefore conjecture the existence of a concealed treasure. On the upper part of the hillock, (which the Tartars distinguish, like all other ancient fortifications, by the name of *Iffar*, or sometimes *Urgenda*;) we met with scattered fragments of tiles and earthen pots; and likewise, in the surrounding valley, with vestiges of former habitations.—Lastly, we here noticed uncommonly thick and old turpentine-trees, some of which were from fifteen to sixteen spans in circumference.

The

The road now leads through a forest, over high ground, into another extensive valley, in which we again met with a hill situated contiguously to the sea; forming terraces as it declines, and in the Tartar language called *Foohl*. Beyond the next eminence, we surveyed a large, deep, and circular dale, abounding with wood, and exhibiting a rocky prominence; which the Tartars term *Vagilista*, or the *Evangelist*. In our progress through continued woods, we crossed an inclosed meadow, which is still denominated *Papās Tsheir*, or the *Pope's Meadow*; and, on advancing farther, we discovered a fine spring, rising in a deep marshy tract overgrown with sedge; and which has retained its original Greek name of *Ἁγία*, or the *Sacred*. Both before and behind these low grounds, a brown schistus again presents itself in the deep glens, where it forms only moderate strata.

Our next route conducted us into the very spacious valley of *Oupka*, or *Outka*, which is enclosed by lofty hills, in the form of an amphitheatre, alternately presenting eminences and hollow grounds. The dark mountains beyond *Yalta* abound in excellent forests of pine-trees, and are visible from the heights near *Gaspra*; being frequently covered with snow, that continues till the month of *May*. They are watered by two rivulets, namely the *Yalta* and *Utsharfoo*. The village of *Outka* is situated in three divisions on the latter; the descent of which, in small cascades, may be distinctly seen from almost the highest part of the mountainous ridge. Although the *Utsharfoo* is, in general, an inconsiderable brook, yet its wide bed, in the valley over which it rolls with great impetuosity during floods, may be about sixty or seventy fathoms

in breadth. Here, as well as in all the stony beds of the Tauridan streams, the *Tamarix Germanica* grows in abundance; so that the Tartars justly term it Ousehen-Agath, or the River-bush; but its stems seldom, if ever, attain the height of six feet.

Outka is exclusively occupied by Greeks, who, together with the other Christian inhabitants of the Peninsula, emigrated to the district of Mariupol; but who, after the subjection of Crim-Tartary to the Russian sceptre, obtained permission from Prince Potemkin to re-establish themselves in this place. Thus twenty families have settled at Outka, in the vicinity of which they dredge for the oysters frequenting the shore in large beds; and, though such shell-fish are here of a small size, yet in point of flavour they are not inferior to those taken on the coast of England.

From Outka, or Avutka, we had a view of the high mountains describing a kind of amphitheatre; and such prospect extends even beyond Yalta. The farthest extremity, toward the East, is the cape of Ayou-dagh, that projects into the sea at the distance of twenty versts. On this side of it is a promontory, called Nikita-Burun, with which the lofty eminences in a manner disappear at the sea-coast. Somewhat nearer, we perceived two other less considerable promontories, namely, that of Yalta, and that on which Marfanda is situated. All the environs along the sea-shore were, in former times, almost exclusively peopled by Greek families.

About the houses built among rocks, as well as on the banks of the rivulet near Outka, I observed the following species of fossils:—a kind of wacca, bearing a perfect resemblance to
granitell;

granitell ; a black schistous chert ; a black slate ; a grey limestone rock with spathose veins ; a hard sand-stone schistus with a small proportion of fine mica ; a brown argillaceous schistus ; and, lastly, the pudding-stone. — In this place, as well as in Yalta, a few scattered olive-trees have been preserved.

Yalta, or Yalita, an ancient Greek colony, is at present inhabited only by a few Tartar families. It lies contiguous to the sea, on a lofty cape which is intersected by a rivulet bearing the same name, at the distance of six versts from Outka, and of fourteen from Alupka. Its Greek church was accidentally blown up by gun-powder, in one of the late Turkish wars ; and vestiges of it are still extant, on a rocky eminence near the shore. The rapid brook Yalta, after flowing through a deep glen, here discharges itself into the sea. On its higher bank is situated the village of Derekoi, in an uncultivated, woody country ; and, no farther than five or six versts above the latter place, the waters of this stream are collected from five deep and capacious glens between the lofty mountains ; and which, according to their series from East to West, are known by the names of Kuva, Balla, Panaghé, Stamitz, and Temiar. The two first named are the principal brooks, the currents of which unite in a forest about one verst from the village of Derekoi ; and, immediately above this place, they are joined by the Panaghé, which is the most powerful of the streams flowing into the sea, on the southern coast of Crim-Tartary. The environs of Yalta are adapted to the culture of all such vegetable productions as require a warm soil and climate. The surrounding mountains are amply provided with the *Pinus maritima*, and other trees ; though part of the forest,

forest, on the lofty eminences, was consumed by fire shortly before the year 1794.

After travelling two versts farther up the rivulet, we arrived at *Derekoi*. Its vicinity presents one of the richest botanical territories in the whole Peninsula. The most remarkable plants, which I here observed, are the *Ophrys anthropophora*, *muscaria*, and *Corallorhiza*, the *Serapis grandiflora*, *Satyrium Epigogum*, *Orchis Coriophora* and *militaris*, *Tamus communis*; a beautiful *Asperula*; and, in the stony bed of the brook, a low, though in all its parts very large and respectable, *Hera-cleum* with fetid umbels; the feculent smell of which is not unlike that of the disagreeable *Arum*, on the approach of night. We also noticed here a few old chestnut-trees, which bear edible fruit almost every summer; and it is much to be wished, that so useful a tree were generally cultivated. Excepting those in the neighbourhood of *Derekoi*, there is not a single specimen to be found in the whole country. All the species of hawthorn, which thrive on the mountains, likewise grow here in abundance. Strictly speaking, I have throughout the Crimea met with the following seven; namely, one with large stems, frequently more than twelve inches in thickness, having scarcely any thorns, and producing black berries; a second, with brown berries; a third with oblong red berries; then the well-known species of *Cratægus torminalis*, *Ari*, *Oxyacantha*, and the *Crat. Orientalis* of Tournefort, producing either a bright yellow, or deep red fruit of an agreeable flavour; and which might be greatly improved by engrafting.

On departing from the dale watered by the Yalta, we travelled over inconsiderable heights towards the valley of
Marfanda;

Marfanda ; where we again met with the brown and blackish schistus, intermixed with layers of brown, quartzose, crystalized sandstone ; though, in our farther progress, we observed in every direction no other fossil but the fragments of calcareous rock. On a steep eminence near the sea, between the villages of Magarath and Marfanda, we noticed the ruins of an ancient monastery. Having passed the former on the sea-side, we pursued our route towards the village of Nikita, through a wild country abounding with woods. The three last mentioned places were once inhabited by Greeks, who emigrated to Mariupol ; and whose numerous, neglected gardens have since become the property of M. Smirnof, Counsellor of College, in consequence of an event which it would be improper to relate. Instead, however, of granting such lands, as well as other vallies in the South, to various proprietors who have no inclination to undertake any improvements for the benefit of their country, they ought to have been given to useful colonists, who might be transferred hither from the southern regions of Crim-Tartary. The elevated sides of mountains here also produce abundant pines and other lofty forest trees, that are not used by the natives ; and among which the *Fraxinus ornus* and *Juniperus oxycedrus* are very numerous.

Before we reached the promontory termed Nikita Burun, which projects to a considerable distance into the sea, we observed, on the left of our road, large calcareous rocks, rising high above the level of the water ; being separated from each other, and ruptured in a most terrific manner. Among such clefts, there is one, particularly deep, wide, and dangerous to

approach. It is filled with solid, rocky masses, from the interstices of which a cold current of air was distinctly perceived. On the mingled fragments, the *Cratægus Aria* was in blossom; and small bushes of elm, sea-pine, and other dwarf trees, had superficially taken root among the stones. The strawberry-tree likewise presented itself on the sides of the rocks.

The promontory of Nikita is a rocky neck of land, extending far into the sea. It is a continuation of that lofty and rugged mountainous ridge, which is connected with the Alp, or Yaila. The chief component part of these heights is the limestone rock, that occurs as far as Marfanda. In the centre appears a longitudinal prominence of sandstone, cleft in a peculiar manner; and, on the east side, we again met with a blueish-grey calcareous rock, which is also scattered over the gentle declivities, leading toward the valley of Yourfuf.

This extensive and beautiful dale is partly covered with shrubberies, and intersected by many deep glens. On its northern side, it is bounded by many lofty mountains that become gradually more distant from the sea; towards the East, by the Ayoudagh, or Bear's Hill, which projects considerably into the water: on the coast, it forms a round, level bay, from the middle of which a ridge proceeds towards the sea, and terminates on the shore in an angle, with a few fronting shelves. At a short distance from such cliffs, there is a rock rising out of the sea, more than fifteen fathoms high, and divided into two distinct points; between which and the Nikita Burun is another small, round bay, or road for vessels. On this prominence stands the fortified rock of Urshuf, or Yourfuf, as delineated in the seventh vignette. The village of the
same

same name is somewhat farther to the West; another, called Kyfiltash, with its beautiful gardens, lies towards the country; and a third village, termed Kırkoolet, appears in the East, at the foot of the Ayoudagh, whence a horse-road leads over the mountains to Koogush. Beside numerous trenches formed by torrents, there are the two rivulets, Sünarpootan and Artek, which take their course through the eastern parts of the valley towards the sea. The foundation of the whole dale appears principally to consist of that destructible, brown, argillaceous schistus, the strata of which are in some places discernible: they extend almost in a straight line North-west and South-east, though sometimes they apparently have a wavering direction.

The rock last mentioned is, on its northern summit, fortified with an inaccessible wall; and, about six fathoms lower, around a terrace that may be easily ascended from the deep glen, between the two points above alluded to, we met with a battery, probably of Genoese construction: it is erected of rough stones cemented with lime, about one fathom and a half in thickness; and one flank of which has two embrasures for the discharge of cannons fronting the bay; while the other is directed against the valley, with five battlements. The communication between the two rocks has been secured by a wall; and the surface at the foot of such eminence likewise appears to have been enclosed by a wall, and by round bastions. Immediately below the battery, we noticed the foundation of a circular tower; whence fortifications of masonry-work descend towards the sea: here a small but very safe harbour has been contrived, by connecting a cliff with an artificial bank or

mole. The southern extremity of the rock, contiguous to the shore, is throughout rugged and inaccessible: it exhibits a blue calcareous stone, in irregular layers inclining toward the North; and the shelves within the sea consist of a similar fossil: Such strata, however, are more distinct in the northern part of the rock, where they are cast at an angle exceeding forty-five degrees, in the same direction; though proceeding from East to West. The mineral itself is of a blueish colour; emits a fetid smell on friction; is interspersed with spathose veins, and uncommonly hard. Beside the fragments disengaged from the main rock, we discovered around its base blocks of granite, and a black basaltic wacca, intermingled with a dark-green shirl; which perhaps originate from basaltes.

Within the fortress, the *Hyoscyamus albus* was flowering in abundance: this plant occurs in no other parts of Taurida, and has probably been here propagated by seeds accidentally scattered. Both scorpions and the gigantic blue *Carabus* were found in this neighbourhood, residing beneath stones.

On leaving the spacious valley of Yourfuf, we crossed a ridge which connects the Ayoudagh with the lofty mountains; and, after passing Kurkoolet, we arrived at the village of Parthenit. The black schistus between Yourfuf and the Ayoudagh is, in a few places, remarkably interposed with pyrites, and partakes of a metallic nature.

The Ayoudagh is a lofty, conoidal, and prodigious hill, abounding with steep rocks, and thinly covered with trees: it is separated from the high Yaila, or alpine elevation, by an extensive valley; and is on the other hand joined to it only by means of the flat ridge before mentioned; in which the brown

schistus

schistus covers the lower part. The mount itself advances into the sea: it forms abrupt precipices, in the manner of a bastion, and produces numerous strawberry-trees on its southern rocks, which are almost inaccessible. Its northern half consists of a grey wacca mixed with shirl, displaying a greenish shade, and resembling sandstone, when recently broken; but, in general, dividing like trap into trapezoidal pieces, which externally acquire a blackish cast. On the sea-side, the Ayoudagh exhibits a brown-red fossil, composed of quartzose grains that are loosely cemented. Both are thrown together in large, mostly cuneiform blocks or masses, often two or three feet in thickness, of various shape, and perpendicularly cleft towards the sea-side. This hill commands a prospect of nearly the whole southern coast; and, on account of its altitude and projection into the sea, it may be seen from the promontories near Sudagh, as well as from Gaspra. On its upper surface, the ruins of a Greek convent, defended by a wall, and formerly dedicated to St. Constantine and St. Helen, are still discernible. The building is six fathoms in length, and three in breadth; but the front part measures four fathoms. Near the monastery, we noticed a marble column lying on the ground, which is five arshines, or eleven English feet, eight inches long, and about three spans in diameter.

The village of Parthenit is situated in a valley immediately behind the Ayoudagh, between this mount and another more eastern promontory: it is seventeen versts distant from Yalta; and its Greek name appears, in some measure, to allude to the history of Iphigenia. The rivulet Takata, on the upper banks of which stands the large village of Der-

menkoi, with its numerous gardens, flows through this valley into the sea, and spreads over a considerable portion of the strand. All the walls belonging to the houses and gardens at Parthenit, are erected of the grey or blackish stone obtained from the Ayoudagh, and which breaks not unlike trap.

The cape above described confines the bay of Lambat, or Lampad, on its western side. The eastern promontory, which encloses this bay in the form of a crescent, below the village of Kutshuk-Lambat, projects abruptly into the sea, with strata of a shirly wacca, cleft in the manner of trap-stone, and lying obliquely towards the North: a black, partly friable, argillaceous schistus covers one half of the eminence, and is likewise precipitately attached to the side of the valley, nearly as far as the Beeyouk-Lambat. The bed of the bay is a brown schistus; and the western cape, which also advances steeply into the sea, displays a similar wacca mingled with shirl. The *Avena fatua*, *Cynofurus aureus*, *Ephedra*, *Jonthlaspi*, and a peculiar kind of *Alyssum*, were growing on the rocks; where I farther discovered a very small common Blue-bottle, which scarcely ever occurs in the fields of Crim-Tartary.

After mounting the Beeyouk-Lambat, I ascended by a dangerous path the declivities of the alpine heights surrounding the bay, partly on horseback, and partly on foot; in order to explore the constituent parts of such elevations. Beyond the source of the rivulet Lambat, we were obliged to leave our horses behind, and to climb up the wild forest on foot. Above the brown schistus (the undulating strata of which are in a higher situation on the mountains, and flatter than I have ever observed them) there immediately appear fragments of a blueish-

blueish-grey calcareous rock, full of large madreporites, together with traces of very small cochlites or petrified shells. These decomposed fossils are found at the perpendicular height of almost one hundred fathoms above the level of the sea, extending to the foot of the rocky bank; which here appears to be nearly of a similar elevation, and forms part of the Babugan Yaila, under the name of Magarash. Large blocks of basaltic spar were also disengaged from this eminence, between the stones of which flourished the *Ornithopus scorpioides*. In the gardens of Beeyouk-Lambat, I noticed fine olive-trees, and some tolerably large stems of the *Cratægus orientalis* or Medlar-tree, which had apparently been engrafted.

From Kutshuk-Lambat we were again obliged to quit the shore, on account of two prominences extending into the sea; and one of which is called Bootanee-Kayaffé. The first consists of a grey limestone rock, and has probably been precipitated from the rocky alpine terrace, so as to produce cliffs in the sea: one of these is called Dashkema, from its resemblance to a ship. The second cape is composed of wacca resembling trap, to which is attached a black trap-like schistus. — Immediately after follows the mouth of the rivulet Lambat, near which lie scattered, or rolled down toward the sea, a number of large and small blocks of a peculiar alpine wacca, similar to granitell; but which properly consists of a combination of quartz, white calcareous spar, and black horn-blende, or *Talcum corneum*; the last forming a fine admixture of nearly equal parts; and the whole possessing a considerable degree of hardness. A similar fossil also occurs near mount Ayoudagh. — Through a passage, which this stream has made between the

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the contiguous hills, we could distinctly perceive a steep bank of grey rock, situated on an elevated part of the Alp, and which is known by the name of Kush-kaya, or the Eagle's rock.

Beyond the rivulet, there is a tract of the sea-shore, that exhibits beds of schistus partly in a strait, and partly in an undulating line. We now again retired from the coast, and crossed a hollow though at present dry glen called Kara-Ousehen; being deeply excavated in the brown schistus, which intersects the horizontal bed of the fossil resembling trap. Here the mountains, that form a projecting angle toward the South-east, in front of the Babugan Yaila, approach the shore with small but remarkably broken hills: thus we were under the necessity of passing a very difficult road, leading over mount Kostaal, which extends, with its stony fragments, in an abrupt manner, to the brink of the sea, and consists of a very peculiar light-grey fossil cleft into a great variety of cuneiform and trapezoidal figures, while it is deposited in bulky layers. This mineral, when recently broken, contains, like the wacca above described, an evident admixture of shirl: it is of a scaly, compact texture, interspersed with dark or brown points, and a large portion of quartz; so that it strikes fire with steel, and is of considerable weight. Its fragments become efflorescent on exposure, and frequently exhibit a whitish or rusty yellow crust, beneath which a dark blue streak is perceptible. A similar species of stone, divided into small pieces, in size resembling ship-biscuits, is found on the mountains of Ural, in the upper district of the river Ural or Yaik, near Verechoyaitzk, where it is called by the natives Suckharnoi-kamen, or Stone-biscuit.

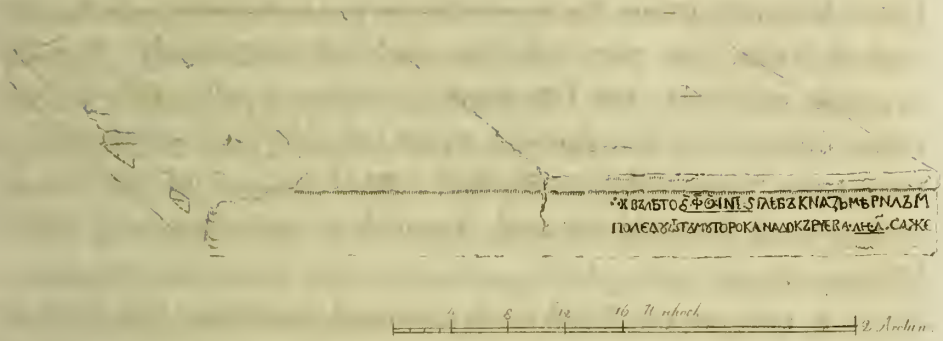
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After having crossed these shattered mountains, we again met with a horizontal bed of brown schistus, mixed with clay. Its winding strata are in a manner speckled like some roots of trees; taking an undulated direction, and extending into the valley of Alushta. The whole road, from mount Ayoudagh near Parthenit to Alushta, being a distance of twelve versts, presents beautiful plants and shrubs. Among the latter, we met with the *Coronilla Emerus* in abundance.

The extensive dale of Alushta separates the western part of the Crimean mountains, hitherto described, from those in the eastern quarter. Its breadth is about six versts; but its depth does not exceed five, when computed from the base of the lofty Tshatyrdag to the sea-coast. This mount, being isolated by two vallies that spread as far as the northern plain, confines one of the latter, and is in a manner displaced toward the North; where it appears to be excluded from the series of remarkable mountains. On the western side, a cape of nearly similar elevation projects from the eminences in that region; there forming the Babugan Yaila, and stretching forth its promontories to the shore: on the eastern side the heights of Temirdshi, though somewhat lower, stand opposed to the Tshatyrdag, and their declivities likewise reach as far the sea; because the whole coast, from Lambat, takes a north-easterly direction. Between the more southern Babugan Yaila, and the steep Tshatyrdag, both of which are apparently detached from the other mountains, a broad and deep woody dale extends North-west to the sources of the river Alma, which are principally collected from the eastern part of the Alpine Babugan, where only a flat ridge, in a line with the Tshatyrdag, separates the current of the waters from the brooks flowing

towards Alufhta. The eastern, and less excavated valley, lies due North, near the sources of the river Salgir, between the lofty hills of Temirdshi and the Tshatyrdag. Through this plain a tolerably convenient coach-road, leading to Alufhta, was formerly made by a battalion of chasseurs. The rapid brook Temirdshi intersects the dale last alluded to, and discharges itself into the sea near Alufhta. In its vicinity, another rivulet, known by the name of Mefarlik, and coming from the western dale, also falls into the sea, after passing the villages of Kotnakhoo and Koobukul, at the foot of mount Tshatyrdag.

The village of Alufhta is situated between the two last mentioned rivulets, on an isolated height, contiguous to the sea. It still exhibits vestiges of an ancient Greek fortification, which formerly had a considerable population, together with an episcopal see. There are yet standing the ruins of three towers, and of a stone-wall twelve feet high, and from six to seven feet thick. A large round tower composed the south-eastern corner fronting the sea, and was raised on an inclined plane: whence the wall extended in a direct western line, and was here somewhat stronger, on account of its more gradual elevation. On the north-eastern side, the wall, being thinner and forming an obtuse angle, was defended by a square tower standing in the middle of such angle, and by another placed in the northern corner, at the distance of about seventy paces from the former. The northern and western declinations toward the valley are steep, and we here found only traces of walls. The enclosed space is now occupied by a few Tartar huts, rubbish, or dung-hills; and there is only part of a transverse wall remaining in the centre.



Journey over the Tshatyrdag, and through the South-eastern Mountains of the Crimea.

DURING the month of May, I made several excursions from Akmetshet over the Tshatyrdag, the foot of which is, in a direct line, scarcely twenty versts distant from that place. When viewed from the plain country, this is the highest mount in the Crimea.

The white and recent calcareous mountains, which extend along the Belbek as far as Albat, are, in their breadth from the river Katsha to Beeya-Sala, situated between the rivers Salgir and Alma. They are narrower than the ancient emi-

nences ; but they approach nearer to the Tshatyrdag, which, on account of its more northern situation, belongs to the latter, and terminate at an equal distance of ten versts from its northern basis and from the town of Akmetshet. Although the former mountains occupy a larger space between the Salgir and Karassu, yet they are lower and less diversified ; so that in these environs the Tshatyrdag, together with the whole eastern quarter of the more elevated heights, may be distinctly seen from Temirdshi to Sudak. This mount is still more conspicuous from the sea-side, where it is completely exposed ; because it abruptly declines toward the valley of Alushta : hence it may be explained, why the ancient Greek navigators took particular notice of it ; and, according to Strabo, distinguished it by the name of *Trapezus*, or the Table.

The road, leading to the Tshatyrdag, proceeds from Akmetshet up the banks of the Salgir to Sultan-Mamut, the residence of Batyr-Aga, a descendant of the family of Oirat, who is the most respectable and opulent Counsellor of State among the Tartar nobility. At his house all travellers, desirous of ascending the mountain, meet with a hospitable reception, as well as with guides and horses. The country, which we crossed in our way thither, is bounded by moderate calcareous eminences ; and in some parts presents the most charming landscapes. For, not only the sides of the hills are well covered with luxuriant herbs, but there are in many places fields, cultivated by the inhabitants of the numerous villages that occur on both banks up the Salgir. Among these, we noticed the most remarkable, about twelve versts from Akmetshet, on the left bank of the river, and known by the name of Eskee-Sarai, or the Old

Castle, on account of an ancient fort, consisting of an irregular square, enclosed with a wall, and strengthened by four towers, all of which are cemented simply with lime, and appear to be of Genoese workmanship. The village itself lies in a delightful situation, and has a considerable metshet. In its environs, the *Salvia Austriaca* of JACQUIN, and *nutans*, *Teucrium Laxmanni*, *Beta Cicla*, and *Poenia multifida*, are frequent plants; while the *Hordeum bulbosum*, and the common rye-grass of Crim-Tartary, grow in such abundance on fallow lands, as if they had been sown by the husbandman.

About halfway to Mamut-Sultan, in the vicinity of Eskee-Sarai, the ancient horizontal beds of limestone, which in some hills are exposed on the surface, evidently pass under the mountains of cretaceous marl extending to this place, and again rise toward the anterior eminences of the Tshatyrdag.

A convenient horse-road, computed to be ten versts in length, leads from Mamut-Sultan up the Tshatyrdag, on its northern side. Such route is usually taken by travellers visiting this mount, in order to inspect the abyss which presents itself on the same side of the hill, at a considerable height; and in which ice remains undissolved for a series of years. The hope of finding a greater number of vernal plants in blossom, induced me to prefer the south road, and to ascend the mount from the opposite side, at another excursion. I therefore pursued my journey on horseback farther up the banks of the Salgir. In travelling towards the village of Ayan, along the low country, we observed, at the side of a somewhat abrupt hill, horizontal strata of sand-stone interspersed with clay, in a South-east and North-west extension, but declining towards

North-east. Immediately above Ayan, there appeared steep, grey, calcareous mountains, with barren rocks, the boundaries of which are mostly East and West; so that the heights are intersected in the same direction. In some places, the rock consists of a true *Dysoxys*. Several deep furrows, excavated by rain-water, in the form of steps, proceed from these mountains into the plain, and on every side exhibit a rocky surface. Beneath one of such cavities, among hollow rocks, and from a large aperture, the Salgir derives its source from a powerful spring of cold water, which rises with a noise, above its efflux, in a cavern undermined by the snow-water descending from high rocky terraces: and there is no doubt, that such spring is supplied from the interior of the Tshatyrdag by the water collected from its summit and its cavities, after the solution of snow. Between the rocks of this river trout are taken in great numbers. The mossy rocks, about the source of the spring, produce commonly a viscous saxifrage, of a considerable size. Besides the small bushes of *Ulmus pumila*, we met in the crevices of the rocks with the *Spiræa crenata*, which occurs in no other part of the Crimea: and the *Cerastium tomentosum* is here the most frequent flower. Among those growing in abundance, we noticed the *Pedicularis tuberosa*; an elegant small *Heracleum*, the *Campanula hybrida*, *Asclepias nigra*, and *Vincetoxicum*, *Geranium lucidum* and *robertianum*, *Asplenium Ceterach*, and *trichomanoides*; while the *Bryonia* and *Atropa physaloides* were thriving between shady rocks.

After inspecting the sources of the Salgir, I followed the road slightly declining towards the village of Tshavké, which is situated about two versts thence, on the banks of a
rivulet

rivulet bearing the same name. On proceeding up the source of the latter, we first observed open eminences interspersed with cultivated fields: these were succeeded by more considerable hills covered with wood, and rising toward the foot of the Tshatyrdag. On ascending still farther, the valley (between this mount, which abruptly declines on its eastern side, and the mountains connected with the Yaila of Temirdshi,) becomes progressively narrower; and the heights last alluded to display along the brook chiefly the stratified brown schistus, which generally serves as the foundation of all the principal dales, taking a North-easterly direction, and precipitately advancing North-west, below the basis of the Tshatyrdag. The road then passes through the narrow defile called Angar-Bogassi; which, between the highest part of the Tshatyrdag and the lofty Yaila, leads into the valley of Shuma, at the southern foot of the former. In the woods I found the *Orobus luteus* and *tuberosus*, *Smyrniium Olusatrum*, *Diſtamnus*, several handsome *Lathyri*, and an annual *Allium* of a peculiar kind. In the ploughed fields I noticed, beside the *Caucalis daucooides* and *latifolia*, which are common throughout Crim-Tartary, numbers of the *Bunium Bulbocastanum*, that occurred in no other parts of this peninsula; and the esculent roots of which are by the Tartars denominated Kodsh-Kardash (*Testes arietis*): the Balm and *Chelidonium corniculatum* likewise grew in abundance. In dry shady situations of the forests, especially among the decayed branches, there also appeared a peculiar kind of small dark-brown *Blatta*, totally different from the *Blatta lapponica*. All the Crimean species of Hawthorn are common in these woods, as well as the *Pyrus orientalis*, one of which I

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met in the vicinity of Shuma engrafted on the trunk of an old pear-tree, growing to an unusual height, and bearing much larger fruit than the low wild trees of this species generally produce; a convincing proof that this indigenous shrub, with leaves of the willow kind, may be greatly improved.

The village of Shuma, or Shumai, stands on somewhat elevated ground, at the southern foot of the Tshatyrdag, in a country abounding with springs. Among the principal sources, contributing to form the brook Mefarik that flows towards Alushta, there is one in particular, rising impetuously through a hole within the rocks, which in size resembles a fox's kennel. From the noise of these springs, issuing in various parts, the village is said to have received its name. The soil is here so remarkably fertile, that single ears of wild rye and barley are seen growing in every direction. To the North-east of this village lies the considerable Alp of Temirdshi; which, especially at its extreme southern angle, abruptly terminates towards the valley, and there exhibits craggy rocks; but which, in an eastern direction, extends to the Karabé Yaila. On the West-south-west, appears the still more elevated Babugan Yaila; due West is the village of Kobukul; towards the North-west rises the Tshatyrdag itself; lastly, in the South and South-eastern regions, we had a view of the sea and of Alushta; toward which place the valley, being bounded by moderate woody eminences, gradually declines to a distance of about five versts.

On the fourteenth of May, after the dawn of a somewhat rainy morning, I departed from Shuma, and ascended the Tshatyrdag on a warm and uncommonly serene day. There is a horse-road, leading from the village over a long rocky ridge

toward the upper part of this mountain, which is nearly five versts distant. The ridge, before alluded to, takes a curved direction from South to North-west; and consists partly of grey calcareous rock, and partly of a few obliquely intervening strata, composed at first of quartzose sand-stone, then of a solid brown schistus, and at length of a more bulky layer of the same schistus interspersed with clay, and occasionally containing pieces of kidney-formed iron-ore. The upper part of this, as well as of another ridge extending into the valley, and proceeding downward to the sea-side in a line nearly parallel to the former, is at first shaded with beech and other trees; but, on its higher parts, with those trees only: a fine spring purls down the anterior of these ridges.—Here, likewise, the *Bunium* is very frequent, and the *Polygala grandis* of JACQUIN grows uncommonly beautiful, sometimes producing blue, though more rarely white flowers.

The upper part of the Tshatyrdag is impassable on horseback, being bare, and formed of rocky terraces rising gradually one above another; the lowest of which is the most considerable. Between the higher terraces, there are extensive tracts, occasionally excavated, so as to represent semi-globular hollows, in which the snow-water accumulates, and supplies local springs. The species of rock is uniformly a compact, grey, sometimes dark, and on friction slightly fetid, limestone; which, in consequence of its decomposition, has deposited large quantities of fragments, both at the side of precipices and in the wood: on the top, however, it is less dissevered, being only cracked and diversified; while the whole rock exhibits a variety of interfections, frequently resembling characters

characters or letters. The limits of the strata, in some of the terraces, evidently proceed in a direction South-east by East ; and North-west by west ; deviating only a few degrees from the perpendicular line, in their inclination toward the South-west. In other terraces, they appear to extend more North-east, and to recede in depth from the perpendicular position towards the North-west. On the upper platform of the mountain, small round accumulations of rock rise one above another: between them are vales, somewhat excavated, and covered with black vegetable soil ; but some of the hollows on the western side were, even in the middle of May, filled with snow, at the edge of which the primroses now only began to vegetate, though they had already flowered in every other situation. The whole mount, together with its expanded basis, may occupy a surface of nearly ten versts in length from North to South ; and about five versts from East to West. At its greatest elevation, on both the sides last mentioned, it forms steep and abrupt rocky corners projecting above the vallies, especially that of the Alma, situated between the western precipice and the Babugan, or the Babyrgan-Yaila ; at which place it presents a terrific view, on account of its depth, and of the darkness occasioned by thick woods. The highest point of the Tshatyrdag, however, is towards the West ; where it certainly commands the prospect over the opposite Babugan-Yaila ; the altitude of which is, in other respects, scarcely inferior to the upper plain surface of the former mount. On the other hand, we could thence not only see beyond the Alp of Temirdshi, and what is termed the Karabeé-Yaila, without interruption, as far as Sudak ; but could likewise survey the

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the whole shore extending nearly to Yalta, beyond the intermediate and less considerable mountains. Towards the North, where this lofty hill declines, it affords very distant views over the whole plain country of the Crimea, and the Tarkhanskoi-Kut; nay, even to the vicinity of Perekop.

When the excellent special maps of Crim-Tartary were drawn, immediately after its subjugation, the height of the Tshatyrdag was, by the *niveau*, computed to be about twelve hundred feet perpendicularly above the level of the sea: and, on measuring the mount by means of barometers, in August 1797, from the flat, though lofty eminence on which Akmetshet is situated, its altitude above the latter appeared to be seven hundred and fourteen feet, six inches. The instruments, however, employed on this occasion, were subsequently found to be imperfect, and not to correspond exactly in their results.

The highest central rocky eminence of the mountain is the only part where I met with a few small bushes of the common juniper, the *Evonymus verrucosus*, and alpine dwarf-willows: no other shrubs are discoverable on the whole platform of the Tshatyrdag. Its turfy back exhibits a mixture of such plants as commonly thrive on the Alps and on the Steppes, or in less elevated situations; a circumstance occasioned by the different exposure of the rocky terraces and hillocks to the solar rays. During the month of May, the following were in flower; namely, the *Veronica Austriaca*, *Chamædrys*, and *incana*; *Phleum vaginatum*; *Bromus tectorum*; *Vaillantia*, which is common throughout the Crimea; *Asperula cynanchica*; *Primula uniflora*; *Lithospermum arvense*; *Androsace Chamæsyce*, with red and yellow umbels;

umbels; *Alchemilla*; *Hyacinthus racemifolius*; *Ornithogalum luteum*, and *pilosum*; the *Allium* above mentioned; *Cerastium tomentosum*; a species of *Geum* resembling the *alpinum*; *Fragaria vesca*; *Potentilla rupestris*; *Filipendula*; *Anemone verna*; *Ranunculus rutafolius* and *nivalis*; *Sideritis Syriaca*; *Stachys Germanica*; *Phlomis herba-venti*; *Ajuga alpina*; *Lamium*; *Thymus Zygis*; *Thlaspi bursa*; *Draba muralis*, and *aizoides*; *Alyssum montanum* and *alpinum*; *Fumaria bulbosa*, and another large species of the same genus, with undivided petals, appearing in the first days of spring, on the hills in the vicinity of the Karaffu; *Genista linifolia*; *Viola odorata*; *Taraxacum*; *Cineraria alpina*; *Acrostichum Marantæ*; *Asplenium Ceterach*, *adiantoides*, and *Ruta*. The deep valley of the Alma, between the Tshatyrdag and the alpine height of Babugan, is the only region in Crim-Tartary where the *Belladonna* flourishes; and which is therefore by the Tartars called Babugan-ohot. — With respect to insects, this mount is visited only by a few bees, and small butterflies of the common kind. On account of its fine pasturage, however, it is constantly frequented, during the summer, by horses and other cattle; because it is not infested by vermin. The nights here are generally cool; and the dry season seldom checks vegetation so as to render the soil unproductive. One of the principal causes of this fertility must be ascribed to the fogs and clouds; which, on the least humidity prevailing in the atmosphere, attach themselves to the upper part of the Tshatyrdag, at first surrounding it with vapours, and at length covering the adjacent lofty Alp, or Yaila. Hence this mountain is, by the neighbouring inhabitants, considered as a barometer, which in such cases indicates

dicates rain ; as, on the contrary, when it appears serene, and without any clouds, constant fair weather may then be expected.

Having now described the Tshatyrdag, I shall proceed to investigate the eastern half of the various Crimean mountains ; which, though divided by a spacious valley, apparently extend in an uninterrupted line with the former, as far as Kaffa. They consist, on the whole, of the same kind of horizontal strata, as most commonly form the western part already specified ; excepting that the wacca, mixed with shirl, never occurs in them ; and that the free-stone, being generally deposited in thick layers, often breaks in large sheets and masses of a rhomboidal figure. Farther, moniliform iron-ore, and pudding-stone, are still more common in the schistous beds ; while the whole ground possesses a saline property, which is particularly remarkable in and about the veins of springs. Hence the caper-bush, that scarcely ever appears in the western division, and other plants delighting in a soil impregnated with salt, are here more general.

The nearest lofty part of these eastern mountains is the Alp of Temirdshi, being separated from the Tshatyrdag only by a pleasant woody dale. The former has given its name to an adjacent village standing on somewhat elevated ground, whither we travelled on horseback, along the banks of a fine brook, the source of which is in the place itself. In the lower tract of the valley, we passed over a horizontal stratum of a blueish argillaceous schistus, interspersed with brown layers, in which

deep trenches are formed by rain-water. The opposite mountains display, on the edge of the schistus, a rocky lime-stone; and, in the higher parts, a calcareous breccia, containing spherical stones of every kind of stratified fossil found in Crim-Tartary, especially of sand-stone, though in size seldom exceeding a closed hand. In proportion as we ascended the foot of the eminences progressively rising above the village, the fragments precipitated from the rocks, and lying along the descent of the mountain, on both sides of the rivulet, became larger and more frequent.

The village of Temirdshi stands in a high situation, above the valley and the irrigated fields producing corn and flax, on the declivities. Its houses are built close under a lofty bank of rocks projecting with numerous rocky points, between which are deep hollows covered with wood. This eminence appears to take a direction from North-west to South-east; and is, by an intervening dale, separated from that of the Alp or Yaila extending North-east. Its strata cannot be clearly distinguished; though, in some places they likewise incline to the North-east, and consequently bend towards the valley. Prodigious masses of rocks have been precipitated from the upper parts, immediately above the village, where powerful springs issue forth beneath the rocks; and tradition relates that several of the habitations formerly erected there, have been crushed by their fall: such an event may, in some measure, be explained from the impending situation above described. Even in their present state, especially after heavy rains, pieces of rock are sometimes disengaged, and roll down towards the village; but they are not attended with dangerous effects,

on account of the larger masses lying in front, and preventing their farther progress. Hence, some Tartar families have boldly erected their dwellings in the midst of detached rocks, that uniformly consist of the pudding-stone already mentioned, which is cemented with calcareous matter, and in a few places exhibits a regular stalactite. Some of these masses are from seven to eight fathoms in size, and occasionally have interstices between them; lying one above another, particularly near the source of the rivulet that is enclosed beyond the village; thus grottos appear beneath the rocks; one of which, shaded by an old walnut-tree in front, forms the most charming hermitage imaginable. This romantic place, in consequence of the operations of nature, that have caused its present external appearance, resembles the dissevered rocks of Alupka in miniature; but the site and open prospect of the village are incomparably more pleasant. The fields in its vicinity commonly produce the *Ruta linifolia*, and the rare *Chelidonium hybridum*.

The mountain, at the lower part of which stands the village of Temirdshi, is, like the whole border of the Yaila, intersected from South to North; and the foot of the rocky front is covered to nearly one half of its height, with coarse particles of earth and rock; on which I found the *Astragalus Poterium*, *Anthyllis cornicina*, a fragrant *Dracocephalum*, and other handsome plants. My friend HABLITZL maintains, that he here likewise discovered the *Statice Echinus*, which, however, has not occurred to me in the whole Crimea. The layers of pudding-stone at the South-western corner, which front the sea and the valley of Alushta, incline, like the surface of the Alp, at an angle of forty-five degrees towards the North-east.

They

They run beneath a stratum of a more complete sand-stone, of nearly equal thickness, perpendicularly cleft, and on its upper part forming conical ferrated cliffs, that project with obtuse points. On directing the voice against the latter, they return a very distinct double, and sometimes triple, echo. Within the breccia, numerous quartzose pebbles were observable, and only a few small fragments of granite; but, among all the rounded stones contained in the same fossil, there are none exceeding the size of a man's head. Here I farther met with a peculiar kind of punctured wacca disposed in a congeries; then with a layer of a mineral completely similar to black trap-stone; and, lastly, with a few pieces not unlike black lava, having small cellular interstices, which are uniformly filled with a whitish matter resembling zeolites. — Where the pudding-stone terminates, the *Astragalus Poterium* also disappears.

During the whole morning of my visit to Temirdshi and its neighbourhood, it rained with little intermission. All the showers proceeded from the Babugan Yaila; which, as well as the Tshatyrdag, became towards mid-day enveloped with terrific black clouds, spreading in the course of the afternoon over the Yaila of Temirdshi, in the form of a wreath.

On leaving Temirdshi, I proceeded down the valley toward the sea; and, quitting the road that leads over the height to Beyouk-Ousehen, I descended a steep terrace near the small brook Yehdehv, in order to travel along the shore to Kuru-Ousehen. The whole of this extensive valley, which separates the ridges declining toward the sea in a South-eastern direction, is wooded with oak and other umbrageous trees. In all its hollows,

hollows, the brown, often reddish like iron, argillaceous and sandy schistus is discernible; though it frequently alternates with black layers, extends mostly to the East and North-east, and abruptly terminates at the North-west: such strata are, however, in some places, promiscuously arranged.—On the terrace fronting the sea, where we perceived the air uncommonly warm, we met with numerous, often bulky, turpentine-trees, but still more copiously with the black cypress-juniper, that forms a considerable part of the woods covering the sides of mountains; and which frequently measures three-quarters of an arshine, or twenty-one inches in diameter. Along the whole coast, as far as Tuyak, we also noticed the *Rhus Coriaria*, which the Tartars denominate Sari-agatsh, literally Yellow-wood, or sometimes Sumach; on account of its excellent citron-coloured wood, that is alike useful for the purposes of dyeing and veneering. The Caper-bush, the *Cotinus*, *Aegilops caudata* and *ovata*, *Elymus caput Medusæ*, and other grasses* and plants, delighting in a saline soil, grew here in abundance. A peculiar variety of Tamarisk likewise flourished in the hollows, and on the beds of rivulets: it has only three or four anthers in each flower, such as I have nowhere observed in the western mountains. Every bush produces several stems, frequently exceeding seven feet in height, and obliquely inclining toward the ground: the branches are loaded with flower-spikes, so that the whole shrub appears to be covered with white and reddish blossoms.

* From the roughness of their bearded parts, however, all these grasses are very injurious to cattle, and especially to horses; as, by adhering to the mouth and throat of these animals, they frequently prove fatal.

From the brook of Yehdehv above mentioned, to another more capacious rivulet, termed Tut-terek; farther, from the latter to Alushta in a westerly direction, being a distance of about two hours ride on horseback; the whole lower edge of the sea-coast consists of brown schistus: its layers extend in various directions, not unlike the veins in variegated wood; and occasionally form large scaly bodies, the internal structure of which resembles that of laminated iron-ore; but their size is frequently from one to several fathoms in diameter.

This convenient horse-road proceeds to a considerable distance along the sea-shore, as far as the *Karowl-obo*, or Guard-Hill; which, with its obtuse edges, closely borders on the sea, and has received its name from a picquet of Kozaks stationed there. On account of an event that happened at the same time with the dreadful subterraneous convulsion at Kutshuk-koi, the former hill is alike remarkable. It may be clearly perceived on the *first* prominence, that its soft schistous layers have been protruded towards the sea. Hence, its incumbent, harder rocky parts appear broken into fragments, and displaced; while two intervening layers of limestone are likewise promiscuously dislevered, and the soil presents numerous disruptions and crevices, which are not yet completely filled; so that our horses trembled with fear, and were in a manner reluctantly compelled to pass this eminence, as though they were apprehensive that the ground would not support them. The *second* prominence is composed of schistus, the undulating disposition of which resembles the waves of the sea: and, lastly, the *third* consists of solid quartzose sand-stone, forming strata of considerable thickness. Behind these, we reached

reached the village of Kuru-Ousehen ; on the contiguous corn and flax-fields of which the *Beta Cicla*, and *Chelidonium hybridum*, were remarkably numerous.

From the village of Kuru-Ousehen, we travelled over another promontory, called Mangana, to the village of Kutshuk-Ousehen, being a distance of three versts. The latter is situated in a narrow valley, between the lofty cape before mentioned, and another mountainous ridge terminating at the coast, and which is by the Tartars denominated Kutilla. From the eminence last alluded to, we could distinctly survey not only the vales of Kutshuk and Kuru-Ousehen, but had likewise along the shore an open prospect of all the mountains and capes projecting into the sea ; namely, towards the East as far as Sudagh and Koos, together with the Thoban-Kalé, of which we had a clear view : in a western direction, we descried the Thatyrdag, the Babugan Yaila, and even the distant Ayoudagh. This elevated ridge extends, with gradual declensions, from the lofty Karabéé Yaila in a southern course towards the sea ; from which the latter is not very remote. On account of the ice-pits that contain snow throughout the summer, such Yaila is particularly remarkable. Similar parallel ridges, proceeding down the Alp, are observable behind the village of Tuyak, at which we arrived after crossing the larger ridge first mentioned, and travelling three versts from Kutshuk-Ousehen. The eminences consist chiefly of brown and blackish kinds of schistus ; in which deep trenches, formed by rain-water, intersect the high mountains. In one of these steep hollows situated on the western side of Tuyak, and by the Tartars denominated Tzimavl, there appears a sand-stone resembling

sembling chert, with numerous veins of quartz, in which handsome crystallizations frequently occur. In proportion as we descended the deep glen toward the mountains, the strata of this free-stone inclined more precipitately; so that they at length stood entirely on edge, or even assumed a contrary position.

The agreeable and uncommonly warm valley of Tuyak expands on both sides of a considerable rivulet, which arises from the conflux of the waters collected in two deep glens, and is by the natives called Shik-Terek. It forms near the coast an oblong fertile plain of a moderate extent; and which is converted into fine fields for the rearing of flax, by irrigation. The culture of this commodity commences at Alufhta; and most of the dales, being artificially watered, produce it to such perfection, that it is highly valued on account of its length and superior quality. All the flax-fields are, with great care, divided into narrow beds; between which small furrows are contrived for draining the superfluous water. From this branch of industry the Tartars derive a principal part of their maintenance.

As the gravelly plain around the source of the Shik-Terek is enclosed with hedges, and secured from the incursions of cattle, I met in this place with many excellent plants. Along the strand, in particular, I noticed the *Andrachne telephioides*, *Croton tinctorium*, *Cleome ornithopodioides*, *Daucus muricatus*, *Anchusa Italica*, *Bupleurum junceum*, *Centaurea Crupina*, and a variety of beautiful grasses in great abundance. Like Kutshuk-Ousehen, the village is situated on a rising ground of the valley: its houses are erected in succession one above another, and are partly

partly hewn into the rocks. In this, as well as in similar warm dales, we observed a large grass-hopper with streaked eyes, resembling the *Gryllus Tataricus*; and which was already furnished with complete wings in the month of May; though it occurred only flying singly among the bushes.

I cannot, with certainty, state any particulars respecting the nature of the country situated between the Tuyak and Uskut, a tract of about ten versts along the sea-coast; as I have accidentally had no opportunity of visiting such district. If I may judge from a superficial view of its mountains, they appear throughout to consist chiefly of horizontal strata of clay and schistus, likewise extending to the East, as far as Kutlak. A powerful stream, by the Tartars named Kanaka, is said to descend about half way from the lofty Alps into the sea; in autumn, or after heavy showers, its bed is frequently about thirty fathoms wide; but, during the summer, in a dry state. The extensive alpine height, termed Karabeé-Yaila, terminates in a point towards Uskut, at which place I arrived from the eastern side; and the mountains are, due north of this village, between two of the largest hills of the whole chain, intersected by a dale, expanding in a direct line from North to South; widening considerably towards the shore; and serving to conduct the rivulet Akfortha, or Uskut-Ousehen, to its efflux. Here the great eminences towards the West become progressively narrower, and are no longer distinguished by those broad alpine flats already described.

Before I proceed in my farther account, I shall briefly notice the valley of Uskut; and, in order to communicate a more intimate knowledge of the mountains, it will be useful to

describe their interfection, which may be perceived on the very steep and dangerous road, leading in a northerly direction from Uskut to Karassubasar, though only passable by Tartar arabas, or two-wheeled carts drawn by oxen. This division of the heights is one of the most instructive, with regard to the geology of the Crimea.

The valley, in which the populous village of Uskut lies at some distance from the sea, expands towards the coast; where there is a kind of road for the convenience of shipping. The whole dale is provided with springs, and contains many vineyards; which the Tartars, however, cultivate chiefly on account of the grapes: these are carried to the market of Karassubasar, where several of the inhabitants, and especially the Jews, convert them into wine of an inferior quality; because the fruit there produced is almost uniformly of a late sort, and has a hard skin. From the heights around Uskut we descried westwards the Ayoudagh with the projecting Nikita-Burun; then the mountains of Alushta; and, at a less distance, the lofty Karabée-Yaila, behind which appears mount Tshatyrdag: so that we could distinctly survey the southern coast to the distance of about sixty versts.

The very inconvenient road, leading transversely over the mountains from Uskut to Karassubasar, can be passed only by arabas. It extends upwards of thirty versts, when computed in a strait line, and proceeds directly to the North up the valley, from which the rivulet above alluded to flows rapidly down the heights; though it disappears beneath the pebbles,

pebbles, without reaching the sea-coast : such dale intersects two woody eminences, namely that of Arpat on the right, or towards the East ; and that of Skala on the left, or towards the West. From their exposed situation, these two mountains, as well as the Tshatyrdag, are the first that can be discovered from the Steppe of Perekop. The Arpat, which here presents high rocky summits, is the most considerable, and forms a connected chain with the mountains of Kutlak, towards the East ; while the Skala consists of an isolated height, covered with rocky elevations. In the vale we frequently met with the *Crucianella angustifolia*, *Asperula cynanchica*, *Minuartia*, *Scutellaria orientalis*, *Verbascum Boerhavia*, and other beautiful plants. The road leads up the foot of Mount Skala, where the valley becomes progressively deeper, very narrow, and is watered by descending springs. At first, uniform strata of argillaceous schistus are perceptible ; though, at length, a ridge of grey calcareous rock appears to be incumbent on the former, even in the valley itself. — The structure of the mountains, however, especially those layers which compose their greatest elevation, may be more satisfactorily surveyed from the spot, where the road passes by the rocky summits of the Skala, and attains nearly its highest point. The first was a bulky stratum of soft pudding-stone, the pebbles of which were so loosely connected by a reddish-brown clay, that they crumbled between the fingers ; their colour being probably derived from a mixture of red ochre and bole. This layer is about fifty arshines in thickness : like several others, that will presently be described, it takes a direction from South-west to North-east, nearly following the course of the eastern mountains, and sinking deeper under

under ground towards the latter. Next succeeds a remarkable eminence composed of calcareous stone, apparently projecting with pointed rocks on both mountains: such fossil is irregularly cleft into large masses, and contains numerous fragments of spar, but no vestige of petrifications. Behind it, we again observed a layer of breccia about thirty-five arshines thick; then a small elevation of lime-stone rock inclining towards the North, at an angle of forty-five degrees; now another stratum of pudding-stone measuring eight arshines; farther, a bed of calcareous rock which, near the breccia, is blended with rounded stones; then a strong layer of calcareous pudding-stone, eighteen arshines thick; and, upon this, a bed of sandy schistus fourteen arshines in bulk, which inclines almost perpendicularly, and extends from East-north-east to West-south-west. Now follows another maffy ridge of lime-stone rock, from which fine springs issue in different places. Lastly, on the very surface of the fossils composing the dale, we again met with the brown and grey argillaceous schistus; it is intersected with a thick layer of a dark grey *Dysoedes*; extends, together with the schistous beds, nearly East and West; and declines at an angle of about forty-five degrees towards the Arbat. All these strata appear almost uniformly to continue over the summit of Mount Skala, and likewise to reach the opposite eastern mountains through the intermediate valley.

Another dale, bordering on that last mentioned, commences at the highest part of the road, immediately after passing the stratum of *Dysoedes*: it lies in a sloping direction to the North and North-west; is wooded with beech; and exhibits throughout layers of clayey schistus; of which several hundred appeared
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alternately on the sections we passed, in our way to Yenifala. This valley afterwards expands between gradually declining mountains, and collects from different sources a brook that contributes to form the Tunas, one of the streams combining with the great Karassu. — As the mountains diminish in size, the alternate beds of schistus and clay also become progressively thinner. At a small distance from the village of Yenifala and the corn-mill belonging to that place, the Tunas intersects a grey calcareous fossil many fathoms thick; declining towards North-west, and exhibiting distinct layers that are from one arshine to a fathom in thickness, together with some vestiges of petrifications. On both sides of the rivulet, which here appears to have formerly been dammed up by the rocks, and to have subsequently forced its way through them, the latter present broken and rounded masses that contract the valley in the manner of a gate, and thus occasion a strong current of air through the deep passage. The highest rocky eminence on the left or western side, resembles a prodigious round tower; and is, by the Tartars, called Kush-kaya, or the Eagle's Rock.

The village of Yenifala has a Greek church in a good condition, though it is abandoned by all the families of that nation. The Tartars at present inhabiting this place, have erected only an indifferent house of prayer. Among the stones of their buildings, we noticed numerous conglomerate bodies of broken shells. On proceeding down the banks of the Tunas, as far as the village of Basfi, the beds of lime-stone become gradually thinner, till they terminate at an angle of thirty degrees; and the hillocks expand into gentle slopes. — The road now conducted us to the great Karassu; which;
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like the Salgir, issues from the cavity of a rock in the vicinity of Bafhi: on its banks we observed the Artillery Barracks, that are justly decried on account of their unhealthy situation, and the palace erected for the reception of the late Empress. Here we could distinctly perceive the strata of cretaceous marl incumbent on the level and solid beds of lime-stone; and, though the former appear to be remarkably low, when compared with those in the back ground, yet, towards the steppe, and especially in front of the deep valley containing the town of Karassubasar, they represent considerable mountains, which occupy and surround the whole space between the great and little Karassu: all these eminences, however, form steep and lofty declivities on the South side; but, towards the North and North-west, they imperceptibly decline towards a plain surface.

Although the town of Karassubasar is in itself a place of mean appearance, and its streets are filthy, yet, when viewed from the lofty shore, it produces a charming effect. The prospect, communicated in the thirteenth plate, is farther enlivened by the magnificent *Tash-Khan*, one of the principal mercantile halls; by several metshets; and a garden surrounded with numerous poplar-trees, formerly belonging to General de Rosenberg, but lately granted to the College of Physicians, for raising officinal plants.

After this digression, I shall resume the description of the connected heights along the southern coast of the Crimea. Beyond Uskut, the schistous eminences covered with hillocks, and in a manner dissected by natural trenches for conducting
rain-



rain-water, continue along the sea-coast; and their ridges are combined with the lofty chain of mountains; being diversified by hollow grounds abounding with springs, the water of which is thence discharged into the sea. One of the narrow ridges, being intersected by a deep glen proceeding from the higher parts of Arpat, in a direction almost parallel to the sea, and terminating at the rivulet Ufkut, is peculiarly remarkable on account of an old Greek castle, situated on its steep rocky extremity that projects towards the sea, about seven miles from Ufkut, or nearly half-way to Kapsokhor; and to which the Tartars have given the name of Thoban-Kalée, or the Shepherd's Fort. It consists of a strong round tower, measuring twenty arshines in diameter, and upwards of four fathoms in height; having on the top an open cupola that may be ascended by a flight of steps, with an entrance raised above the ground. Although the tower is damaged by a large fissure, yet, being closely built of free-stone, its walls still remain solid. A pile of earth, probably occasioned by digging up the foundation, lies in front of the entrance, and is overgrown with the *Astragalus Ponticus**, which occurs in no other situation: near such pile appears a round bastion, on the north-western side of the tower; where a wall, two arshines thick, is erected of rough stones without any mortar; forming an angle; then proceeding to the distance of about a hundred paces along the northern declivity of the promontory (which has no rocky precipices, but is covered with juniper-bushes); and terminating at the steep corner next the sea.

* Vid. "Spec. Astragalorum," Tab. XI.; a species very nearly related to the *A. Narbonensis*.

This wall formerly served to defend the space behind the tower, on the side above specified, but is at present partly demolished: contiguously to it, we noticed in one place several tombs that appeared to be of Greek origin. The advanced situation of the cape, on which the tower stands, in a very conspicuous place, affords not only a view of it from distant heights in every direction, but the scite also commands a prospect over a considerable part of the southern coast, both towards Kaffa and Alushta.

In the vicinity of this tower, I observed the *Rhus Coriaria** and *Cotinus* thriving in abundance, as well as low bushes of the *Cratægus Aria*: on its platform grew the *Pisum maritimum*, *Clypeola Jonthlaspi*, and other plants.

Nearly in the direction of Tshoban-Kaleé, we met with the large Tartar village of Arbat, or Arpat, which is situated on a high inland part of the mountainous declivity: above this place, the eminences, known by the same name, form a lofty mount, termed Postrofil; afterwards extend in a North-western curve towards the village of Veron, and uniformly present considerable hills.

On the other hand, the strata of clayey schistus continue along the sea, and are frequently distorted; though they sometimes also remain in their natural position, and take the usual direction. Here likewise it is probable, that the mountains have formerly protruded into the sea, to the extent of several versts in breadth. A few saline springs issue, in various parts,

* Its red, sub-acid berries are by the Turks and Tartars used in broths, to which they impart an agreeable flavour. This shrub is the proper *Sumach* employed by the latter in tanning leather; though it is frequently confounded with the *Rhus typhinum*.

from the deep hollows that intersect the coast, as well as from the shore itself; at present, however, they were in a dry state, and had deposited a considerable quantity of Epsom salt; which, having parted with its water of crystallization, was since converted into powder. Directly in front of Kapfokhor, there appears a bulky ridge of sand-stone, bordering on the sea, in strata disposed above each other; being from three and a half to four and a half feet in thickness; extending East-south-east, and abruptly terminating towards the North-east; though the whole mass is cleft so as to exhibit numberless oblique and transverse fissures.

The fertile valley of Kapfokhor* is encompassed by hills, and delightfully situated at the distance of one verst and a half from the shore; opening towards the bay, which forms the coast between the promontory of Tshoban-Kaleé, and the advanced mountains separating this place from Kutlak. Although it abounds with gardens and vineyards, yet the wine here produced is of inferior quality; because no attention is paid to selecting and planting the best sorts of vines. The bay above alluded to is, however, one of the most favourable to the business of fishing, as there are no rocks to impede the progress of the nets.—The rivulet Shelen (on the banks of which lies a village of the same name, in a high situation, about nine versts from the coast) discharges itself into the sea, near Kapfokhor. The wealthy Tartars of the latter place possess fine tracts of manured and irrigated fields, extending below the lofty sea-shore, where they rear both flax and cucumbers. These, as well as other productions, are carried to

* *Kapfokhor* is a Greek word, signifying a place destroyed by fire.

the market of Karaffubafar, by a direct road leading over the mountains, and passable by arabas. In the low grounds, madder grows in a wild state; and cotton might here be planted to great advantage.

On departing from the valley of Kapfokhor, along the coast, we shortly met with another dale, which is intersected by the rivulet Vorun, in its passage from the mountains to the sea. Among the upper rocks of these eminences are three villages, situated at a considerable elevation; namely, Vorun, Aiferes, and Veron. After ascending the heights to a moderate distance, among thickets of the *Tamarix Germanica* and *tetrandra*, the horse-road conducted us through a deep transverse hollow, denominated Süggül-Tepé, or the Stag's Glen, and thence up a very steep acclivity. Here the alternate layers of an iron-brown and grey clayey schistus appeared strangely distorted, and often in very singular proportions. Similar to those strata occurring towards Alushta, the fossils in this place form a great variety of angular or curved figures; and, on a large scale, exhibit the same appearance as the compressed, scaly, and kidney-shaped iron ore in ochreous minerals displays in miniature; with this difference only, that several concentric ferruginous lamina are here enclosed within another, and the intermediate spaces are filled up with the grey, crumbling, argillaceous schistus. These rhomboidal masses frequently measure from two to three fathoms in diameter; and their formation cannot be easily explained.

From the extremity of the glen above mentioned, we passed into another which spreads in a southerly direction between two hills, called Kütür-Obo and Tültshik-kaya, or the Fox's

Mount, and becomes progressively wider towards the sea. Both the valley and the latter mount are wholly covered with black juniper-trees, resembling the cypress: their trunks grow erect, and in size often exceed the human body, but have apparently been stunted by lopping; so that they are seldom more than nine or ten feet in height. From the abundance of such trees, the glen has received the name of Kara-arditsh-dereffi. The strata of brown schistus and clay, found in this dale, sometimes extend to the East-north-east, sometimes due East and West; while they incline towards the South, both up and downward, at an angle of forty-five degrees. Such layers are disposed with a similar irregularity in the Fox's Mount; which, for more than half its height, consists of the same fossils as compose the Kütür-Obo; excepting that a thick stratum of hard sand-stone is interposed in the centre of the argillaceous schistus, occurring near the basis of the former hill. The lofty Tültskik-kaya is extremely steep and difficult to ascend; its sides and back producing scarcely any other vegetable than the black juniper, and the dwarf grey oak: the upper part of it consists of very bulky layers of that hard fossil, which is almost exclusively employed for mill-stones in the Crimea; and such beds are precipitated towards the South. This, however, is only the fronting northern part of the genuine mill-stone mount, known by the name of Kutlak, which takes a south-westerly course towards the sea, in the form of a sharp ridge: and, though intersected on its eastern side by a deep trench occasionally filled with rain-water, it is nevertheless connected with those extensive woody eminences, called Pertsham-kaya, and expanding towards Sudagh. The ridge.

ridge, last alluded to, divides itself in a westerly direction towards the sea, with a slight curve, into two branches; namely, one to the North, that is both lower and shorter, terminating in the valley; while the other is more elevated, and proceeds to the coast, where it protrudes two capes, one of which is again higher and more bulky than the other, with its incurvation, forming together a figure not unlike tongs. The former of these lofty branches affords a very distinct view of the Karabée-Yaila, the Tshatyrdag, and even of the Ayoudagh. Between the promontories before mentioned and a steep rocky hill, termed Kufhkaya, which is situated in the sea near the vale of Sudagh, there is the harbour properly called Sudagh-Leeman: its bottom consists of clay, and is therefore fit for anchorage.

The large mill-stone mount is, like the smaller one, intersected near its basis by layers of clayey schistus, which likewise form a few eminences in front. The greater part of it, however, is composed of a solid sand-stone schistus; the strata of which running East-north-east, and West-south-west, incline at an angle of forty degrees, or still steeper, to the South-east; are discernible throughout the whole deep glen above described; and extend as far as the opposite woody mountains. On its summit, the crest or ridge has the form of an acute angular roof, and consists of projecting masses of a hard genuine mill-stone; the chief component parts of which are small quartzose pebbles, mingled with a few diminutive kidney-shaped lumps of argillaceous stone, and combined by means of a quartzose, somewhat calcareous cement. The layers of this fossil are from nine to twenty-eight inches in thickness, and lie beneath a bed

of

of sand-stone, varied with diminutive pebbles. The transverse clefts are perpendicular; but the separations of the strata incline to an angle of forty-five degrees. On the opposite side of the sea, somewhat lower than the most elevated ridge, the grey calcareous rock is evidently incumbent on the mill-stone: while the mountains, situated along the coast in the vicinity of Sudagh, generally contain the former mineral. In the lower part of the deep valley near Sudagh-Leeman, we discovered the ruins of an ancient Greek monastery dedicated to St. George.

The mill-stone obtained from the smaller mountain, however, is of inferior hardness, and contains a greater admixture of argillaceous stony particles: it is dug out by the Tartars of Kutlak with uncommon labour, then rolled down the hill, hewn into a proper shape, and sold at different prices, though never for less than thirty or forty rubles a pair. The appearance of some of these stones, which on the whole are of an indifferent sort, led me to hope that I might, in the environs, possibly meet with granite. But, after a close examination, I was convinced that such kind of fossil belongs to the class of horizontal stratifications occurring in the Crimea; as is likewise the case with a similar mill-stone procured from the lofty eminences near Stila, and which is even less valuable than the former.

The village of Kutlak lies, at the distance of about ten versts from Kapfokhor, in a valley between the heights producing the mill-stones above described, and those which rise towards the chain of mountains beyond Aiferes and Veron. The dale is of considerable extent; is encompassed with moderate hills; and

and partly planted with vineyards ; which, however, yield only an inferior wine, that cannot be preserved. Beside the Fox's Mount already noticed, on its south-eastern side, this vale is bounded by the following remarkable elevations : Towards the North-west, directly above the village, there appears a steep rocky eminence, termed Köyerdfenn, and consisting of the solid grey calcareous stone ; to the North-east is another, called Tshakalkaya ; being apparently composed of pudding-stone, but the upper part of it forms two prominences above Aiferes, each of which again terminates in two rocky points, denominated Emdsheten-kaya, from their having some resemblance to teats. Lastly, to the East is the very expanded Pertsham-kaya, with its numerous hillocks, accumulated chiefly by strata of argillaceous schistus. Its foot is watered by the rivulet Karagatsh, flowing through a vale that leads to Sudagh.

The road, conducting to Sudagh, proceeds for about ten versts chiefly in the direction of the rivulet last mentioned, between the extensive Pertsham-kaya (consisting of schistus alternating with breccia,) as well as its woody part, named Kara-agatsh, and the opposite northern mountains, that are not only more rocky and dissevered than the former, but also distinguished by the lofty protuberance of calcareous *Dyfodes*, known by the name of *Kaplaren-Kayassi*. Beside such fossil, the latter eminences alternately exhibit the pudding-stone with layers of clayey schistus, and veins of moniliform iron-ore ; while the strata run from East-south-east to West-north-west, and terminate towards the South-west. — Following the current of the Karagatsh, we crossed a valley planted with vines, and which is called Ayee-Sava, after a desolated Greek church ; till we at length reached

reached the beautiful vale of Sudagh, that likewise abounds with vineyards, and deserves a more particular description.

On account of its excellent wine, the dale of Sudagh is justly celebrated. It extends from the shore to the mountains, in a direction nearly from South to North, being upwards of three versts in length, and two versts in breadth, where it is divided by an intervening eminence, termed Hydatly, and then continues in a more contracted shape towards the northern village of Tarakatsh, to the additional length of three versts; but, to the West, or towards Kutlak, it expands to the breadth of two versts between mountains, and is connected with that of Ayee-Sava. Throughout the whole extent, it is embellished with orchards and vineyards; though only the lower part of the dale, which forms an oval surface perceptibly declining towards the South, is thus exposed to the solar rays, and produces a wine of superior quality: as, on the contrary, the upper and narrower glens, that partly slope towards the North, and are partly deprived of the morning or evening sun by the adjacent hills, afford a harsher liquor, which scarcely holds the fourth place among the wines of Crim-Tartary.—The copious rivulet Souksu, after descending from mountains to the distance of at least thirteen versts, flows through the large valley into the sea. In its course, it is joined by the small brook Karagatsh proceeding from a collateral western dale; but which, during most summers, is in a dry state. Both streams, however, essentially contribute to the fertility of these vallies; as the water is conducted in canals throughout the vineyards, and is judiciously employed for their irrigation. Without such means, indeed, the rearing of that noble plant, in a hot

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climate, and in a dry marly soil, could not be successfully pursued. Of this subject, I propose to treat more minutely in a subsequent section, entitled: "On the culture of the vine in Crim-Tartary."

Although the mountains, that surround the dale of Sudagh, are not among the highest of Taurida, yet they are uncommonly dislevered, steep, and therefore, at first sight, considerably larger, than they would appear with more gradual acclivities. They present an assemblage of various minerals; in consequence of which the hills exhibit diversified figures. This valley is, on its eastern side, contracted by a barren, round, lofty hill, termed *Alfhak-kaya*; and forming cliffs within the sea: it consists of the marmoraceous lime-stone, which the Tartars uniformly denominate *Kokatsh*, or the Blue Rock: on the western side, the vale is bounded not only by a still higher conoidal mount, called *Kush-kaya*, or the Eagle's Rock, composed of a similar fossil, and being covered with pine-trees on its more gradual northern declivity, while every part exposed to the sea is inaccessible; but likewise by another rock that is separated from the preceding by a deep narrow glen; has also a steep verge towards the sea; and on the summit of which is situated the ancient Genoese fortress of Sudagh. On withdrawing from the shore farther into the country, we observed, on both sides of the valley, extensive mountains partly wooded: in a westerly direction lies the *Pertshamkaya*; and on the East is another, by the Russians called *Golaya*, or the Naked Mount, together with several adjacent hills, that are connected with its basis. Towards the North, the proper vineyard-grounds of such vale are confined

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by a moderate ridge, known by the name of Gridatly, which has the form of a crescent; is composed of alternate layers of breccia and sand-stone; and, by intercepting the solar rays, greatly contributes to improve the grapes raised in this lower tract: the ridge, here alluded to, again forms a chain with the heights extending on the northern side of the dale Ai-sava. Farther to the North, however, along the valley of *Tarakatsh*, there are two other lofty mountains; the first of which appears above the village of the same name, with projecting rocks of breccia, in a crested shape; whence it has received the name of *Tarakatsh*, or *Cock's-comb-rock*: the next is in an opposite quarter, on the western bank of that rivulet; consists of a grey calcareous mineral, and is denominated *Baka-tash*, or the *Frog's Rock*, on account of a detached stony mass being in a manner suspended on its bare and steep back, so as to resemble, at a distance, the figure of a frog in a sitting posture. Thus we could, in the environs of these vallies, successively distinguish the different forms which each of the stratified fossils in the Crimea exhibits in the respective mountains: a tolerable idea of such configurations may be acquired by inspecting the two landscapes given in the fifteenth and sixteenth plates; the former of which represents mount *Tarakatsh*, with the adjacent dale and village of the same name; while the latter exhibits a view of the *Kushkaya* and *Pertshamkaya*, two western hills contiguous to the sea, as well as of *Fort Sudagh*. — The whole breadth of the ancient stratified mountains, in a ruptured state, may be computed at about twenty versts in the vicinity of *Sudagh*; where they are joined by the more recent calcareous eminences, near the brook *Indal*: of

which circumstance I shall have occasion to speak in the sequel.

Each of the principal hills before enumerated, deserves separate notice, on account of their individual peculiarities. — Of the whole chain, Mount Kushkaya is the first that becomes covered with moist clouds wafted from the sea, and which frequently arise during serene summer days, but more commonly in the spring and autumn: they also speedily envelope the summit of the Pertshamkaya. When these vapours settle around the eastern lofty hill Golaya, and descend into the valley, they are in such case mostly succeeded by rain.

The grey calcareous rock, supporting the fortrefs of Sudagh, and composing the Kushkaya, is of the same nature as that of Mount Altshak-kaya, which is situated on the eastern side of the valley. Its thick strata are generally bent, according to the shape of the hill, like the shells of an onion, though rather hollow one above another; and consist of a hard, but fissured grey rock, which affords excellent lime. They occasionally contain detached specimens of large madreporites and milleporites, in a very changed state; sometimes also entrochites, but no vestiges of marine animals. Contiguous to one of such madreporites, I found particles of a black petrified charcoal. In a few places within this mineral, there appear to be large and small cavities, some of which are discernible on the surface; for instance, I took particular notice of such a hole within a rock, delineated in the sixth vignette, together with the Greek church and tower there erected. This hill is situated between the fortrefs of Sudagh and the mountains rising towards Kush-kaya. Numerous small interstices between

the rocky fossil occur on the Alshak-kaya; where they are filled with white, short, but obviously ramified coralline excrescences; the extremities of which are frequently in a manner blunted: they are attached to a whitish calcareous crust, apparently poured over the stony surface, and nearly resembling the *Millepora calcarea**. In the last mentioned hill, we also noticed a few horizontal veins of a solid, slightly yellowish, calcareous spar, that breaks in rhomboidal masses, and exhibits various colours according to different situations.

The extensive ridge Golaya occupies a space of six versts, in its progress to the shore, and is connected in a line with the analogous Tokluk-Syrt, of which I shall treat in the continuation of the present section. The former is parted from the Tarakath by a broad rain-water-trench; and its alternations of schistous fossils are not unlike those of the Pertshamkaya. The Golaya projects with a very high rocky summit, and also forms several other less elevated protuberances through the strata of sand-stone, by which it is intersected: the lower part is distinguished by its long ridges, that terminate towards the sea, and are divided by deep hollows conducting the rain-water, so as to give them the appearance of expanded fingers. This prodigious chain of mountains is towards the East, between the villages of Tokluk and Koos, separated by an intermediate valley from a similar massy eminence, termed Booyouk-Syrt. The most elevated portions of the former consist partly of thick masses of sand-stone cleft into large flags, and square thin columns, often exceeding seven feet in length; partly of a ferruginous, brown, more or less friable schistus;

* *Pall. Elench. Zoophytor. p. 265, sp. 163.*

and partly of a grey crumbling clay, inserted between those layers, and which is likewise interspersed with veins of kidney-formed iron-ore, running parallel to the schistous strata. The course of these, as well as of all the layers clearly discernible in the rain-water trenches, is, like that of other horizontally disposed fossils, which form the mountains around the vale of Sudagh, in general nearly rectilinear from North-east to South-west; but they abruptly decline at different, mostly acute angles towards the North-west, or even stand totally inverted. While the highest ridges and prominences are composed of the more bulky free-stone, the hollows and vallies are evidently washed through the beds of clayey schistus, and the valley of Sudagh itself appears to be excavated within the marly strata of the latter: for they are not only visible in every part of its rising border, but also at the foot of the Pertshamkaya, where this stratified fossil, especially in the deep glens, discovers a strongly saline impregnation. Lastly, in the wide tract of such argillaceous mineral, we observed very considerable and uncommonly rich veins of red, nodular iron-ore, and ferruginous clay, extending in parallel lines; from which valuable iron might doubtless be smelted.

The grey sand-stone of this neighbourhood is, for the most part, a compact, very hard and sounding fossil, which bursts with violence when exposed to the fire, and is so thoroughly mingled with siliceous matter, that, on breaking it, few traces of its arenaceous ingredient can be discovered. The plates or slabs, obtained from quarries, are frequently from seven to ten feet and a half in length; from fourteen to fifty-six inches in breadth; and of various thickness, sometimes measuring only

only a few inches. They are usefully employed for building wine-cellars and bridges. In the same layers with the plates, there are found columns of a similar length; and, though often scarcely nine inches square, they afford very convenient land-marks, and are also by the Tartars converted into tombstones. Columns resembling the former likewise occur in less consolidated beds of sand-stone: in which we observed black scattered parts of vegetable bodies; and which often separate into lamina. In such case, the mineral here alluded to is of a marly or calcareous texture.

These schistous mountains are farther remarkable on account of their beautiful and peculiar plants. At the foot of the Pertshamkaya, we met with an elegant white-flowering *Hedysarum*, the *Astragalus lanatus*, and *Dracocephalum cuniloides*; while the back of Mount Golaya produced great numbers of the *Cheiranthus odoratissimus*; and *Astragalus utriger* (*macrocarpus*), which grow in no other part of the Crimea.—The valley also presents many rare vegetables; such as the *Illecebrum capitatum*; *Onosma Tauricum*; *Herniaria hirsuta*; *Hedysarum Tauricum*; *Seseli gummiferum*; *Salvia Habliziana*; *Scutellaria orientalis*, with yellow and red blossoms; *Lotus filiquosus*; *Eupatorium Ponticum*; *Vicia Bithynica*; *Alcea rosea*; *Capparis*; *Verbascum Gracum* (which is cut down by the Tartars; and, after being deprived of its thorns by means of a moderate fire, the sweetish branches of this shrub afford an agreeable fodder for cattle, during the exigencies of winter, when it is conveyed by cart-loads to their homesteads) and *vesicarius*; *Zygophyllum Fabago*; *Harmala*; *Salzola sedoides*, *ericoides*, *tamariscina*, and *brachiata*; *Polycnemum*

oppoſitifolium; *Scabioſa gracilis*; *Centaurea Picris*, *ſolſtialis*, and *montana*; *Tordylium maximum*; *Smyrniſium perfoliatum*; *Echium altiffimum*; *Satyrium hircinum*; *Equiſetum nigrum* and *giganteum*; but, along the ſhore, we noticed the *Bunias Cakile*; *Crambe maritima*; *Verbaſcum pinnatifidum*; *Convolvulus Soldanella* and *terreſtris*; *Eringium maritimum*; *Salſola Tragus*; *Cenchrus racemoſus*; and ſeveral others. Among the moſt conſpicuous ſhrubs were the *Pyrus*, and *Cratægus orientalis*; wild roſe-buſhes that frequently attain the height of nearly two fathoms; and the *Jasminum fruticans*. Indige- nous vines luxuriantly ſprouted on the banks of rivulets, in every direction; and the *Tamarix tetrandra* is here very frequent. The bulbous roots of the *Scilla hyacinthiodes*, *Ornithogalum Narbonenſe*, and of the *Hyacinthus paniculatus* and *racemoſus*, are in ſome places ſo abundant, that a ſpade, thruſt into the ground, will almoſt certainly turn up one of ſuch bulbs, or the tubercles of the *Lathyrus tuberoſus*.

The ancient Genoefe fortrefs of Soldaya, which has borrowed its name from a valley, is ſituated on a detached rock, very ſteep on all ſides, eſpecially on that next the ſea. Its vertical ſurface is oblong, and declines in a northern direction; but is more elevated towards the ſhore. On the borders, this fort is ſurrounded with a thick and high wall, which is farther ſtrengthened by ten towers, partly round and partly ſquare. The former, however, is diſcontinued at the ſea-ſide, where the rocks precipitately riſe; yet here alſo we found a wall, extending from one of the lower towers upwards as far as the watch-turret, erected on the higheſt part of the hill; and in which
pipes

pipes are placed, probably for the purpose of conducting the rain-water into deep, capacious, vaulted cisterns of excellent masonry-work; and which still exist in the lower part of the fortrefs. Only one convenient road leads from the North-western corner up the eminence, between lofty towers, likewise defended by an outwork. On several of the towers and walls, which are partly in a ruinous state, there formerly were numerous inscriptions, with raised Gothic characters elegantly hewn in stone; but many of these monuments of antiquity have been pilfered, so that a few only now remain, together with a *bas-relief* exhibiting the figure of St. George. The principal number of such inscriptions are faithfully delineated, explained, and historically elucidated in a particular work, lately published by the learned Genoese ODERICO*. When I first visited this place, the walls of many edifices, decorated partly in the Gothic style, were yet standing; but most of them have since been demolished, and employed for raising barracks within the precincts of the fortrefs. At present, there is only the large and handsomely arched cathedral remaining on the eastern declivity of the town, together with the towers and the surrounding walls.

A Tartar village, with a metshet, formerly stood at the foot of the Soldaya; but many of its inhabitants emigrated, on the occupation of Crim-Tartary by the Russians; and those who still continued here, have lately been induced to remove to

* “ *Lettere Ligustiche, ossia Osservazioni critiche sullo stato geografico della Liguria cino ai tempi di Ottone il grande, con le Memoire storiche di Caffa, et altri luoghi della Crimea, posseduti un tempo da Genovesi, e spiegati di Monumenti Liguri quivi esistenti, dell' Abbate Gasparo Luigi Oderico.*” — Bassano, 1792, large 8vo.

other situations, in consequence of the building of barracks *. On the western side of this fortified hill, in a deep glen, we observed the Greek church with its high tower, as represented in the sixth vignette. It is situated on a detached rock, at the basis of which there is a cavern or grotto fronting the East.

Immediately below the Soldaya, the sea forms a small harbour enclosed by a series of shelves. The Genoese port, however, properly was the Sudagh-Leeman abovementioned, when describing the mill-stone mount of Kutlak; such haven being bounded by the hills of Kufh- and Pertsham-kaya, near which stood a church, or kind of convent, as has already been stated. Similar churches, or hermitages, were anciently established in several parts of the valley of Sudagh, but they are now in a ruinous state. I have before noticed one at Ai-sava, situated on the northern side of mount Pertsham, in the vicinity of a fine spring. Another of the same description is built on the intermediate curve, between the large and small prominence of mount Golaya, near a powerful brook, the source of which rises from the more conspicuous hill. Its walls are still in good condition; and being likewise dedicated to St. George, it is visited by the modern Greeks, who resort hither by way of pilgrimage. A horse-road leads along the rivulet last alluded to, over the mountains, in a straight line to the village of Tokluk; the distance of which, from the vale of Sudagh, is less than five versts by such direct path.

* The author has on this, as on many other occasions, omitted to state the *real* motive of such emigrations. It is therefore open to conjecture, whether the Tartars, little accustomed to *military discipline*, were terrified, like other free nations, at the idea of *barracks*; or whether they were averse to render the personal services required of them by their new masters, for the construction of these *unpopular* fabrics.—*Transl.*

A very few habitable dwellings have hitherto been erected between the vineyards, throughout the valley of Sudagh. In those seized by Prince Potemkin, but which have since reverted to the crown, he had commenced the distillation of brandy on an extensive scale, though it is at present neglected. A large wine-cellar, with two vaulted partitions, measuring twenty fathoms in length, and nine fathoms in breadth, was at the same time constructed of free-stone, on a gentle eminence. Above its vaults was a room appropriated to the wine-presses, together with the necessary utensils. The cellars were calculated to hold at least six hundred pipes, or casks, in which many thousand eimers of wine could be deposited. This fabric, however, is at present unoccupied; though it still remains in good condition.

From the valley of Sudagh, a convenient horse-road crosses the mountains. Of these, as well as of the heights extending to the plain, I propose to give an account in the sequel. I shall now proceed to mention the vallies situated along the coast, and to describe the remaining hills that border on the shore as far as the bay of Kaffa, by which they are intersected. There are four vallies; namely, Tokluk, Koos, Otuus, and Karadagh. The distance from Sudagh to Koos may, according to the usual carriage road, be computed at rather less than fifteen versts; that from Koos, by way of Otuus, to Karadagh, at nineteen; and from Karadagh to Kaffa, at sixteen versts.

There are two roads leading to Koos. The more convenient one for carriages proceeds across a valley, which conducted us from the village of Taraktash, between the mount of that name, the succeeding one called Sari-Kaya, (both presenting rocky

summits,) and a third hill termed Tokluk-Syrt, at a considerable distance from the sea, to an opposite dale abruptly declining towards that of Koos, between the schistous Tokluk-Syrt and the rocky Porffuk-Kaya. In our progress through a hollow ground, we passed an enclosed well, and afterwards crossed a horizontal bed of pudding-stone. The greater part of this road, however, extends over schistous heights that are intersected by a few rocky eminences consisting of sand-stone and breccia; and which, like all the horizontal strata in the eastern part of the mountains, run in a direction towards the South-east.

The other more difficult road advances from the valley of Sudagh, at a small distance from the coast, over the northern basis of the lofty Alshak-kaya, which projects into the sea, and exhibits a round top. It then descends between the mount and the contiguous Alshik-Syrt towards the sea, following sometimes the course of the shore, and leading by different tracks, either by the way of Tokluk, or in a straight line, to Koos. On this journey, I met with various geological objects that deserve to be noticed. The Alshak-kaya, being composed of the grey calcareous rock above mentioned, is on its eastern side, where a deep glen proceeds towards the sea, in a manner intersected to the height of two-thirds, nearly from South to North: adjacent strata of sand-stone and clay, horizontally disposed, form its whole eastern foot, and likewise display, in the vicinity of the lime-stone, numerous veins of spar. — A moderate counter-eminence, situated beyond the hollow ground, presents on the sea-shore evident strata of clay, which are separated by parallel layers of sand-stone. The crevices of the latter

latter are frequently incrufted with calcareous fpar; being from one fpan to upwards of ten feet in thicknefs; extending fometimes in a ftraight line, at others with ferpentine inflections; rifing almoft North-eaft by Eaft, and North-north-eaft; and finking precipitately towards the horizon. The firft of the large beds of ftone, which terminates at the fhore, confifts of whitifh-grey ftrata of fand-ftone, alternately interfperfed with bulky and thin or fmall mafles of fpar; having likewise intermediate layers of loofe ochre with fpathofe cavities, in which were deposite large, flat, kidney-formed fpecimens of a beautiful *Lodus Helmontii*. I alfo found, between the layers of this foftil, a compressed piece of blackifh petrified wood, about the breadth of two expanded hands, being in a manner divided into fplinters, and intermingled with fpar: fimilar traces of woody particles were farther obfervable in fome of the fand-ftone beds. The adjacent ftratum of clay contains a few diminutive and fcattered pieces of felenite, fuch as are often difcovered in the horizontal layers of that foftil. Another bed of a hard mineral, extending fomewhat more to the Eaft, refembles the ruins of a wall erected of free-ftone. Its ftrata incline almoft perpendicularly, though fometimes rather converfely. They confift of irregular accumulated fquares, not exactly fitted to one another; and are in the interfices, as well as on the furface, covered and encrufted with a matter, that is apparently a compound of fandfy fchiftus and mire. Enclofed within fuch mafs, ferving the fame purpofe as the mortar of a wall, we remarked a whimfical mixture of broken belemnites, or finger-ftones, lying together in their fragments; flat impreffions of ammonites of the breadth of a hand; and
 fmall

small shells of the *Ostrea Jacobæa*, a species of testaceous fish which still exists in the Black Sea.

It cannot be doubted, that the beds of stone above alluded to have originally been formed beneath the waters of the sea, in a *horizontal* position; and that the wood, occurring in them, has thus been compressed. What extraordinary phenomenon of nature, therefore, has displaced the whole mass of these layers, of which mountains are composed to the extent of many miles, and all of which rest nearly in a parallel state, like those of horizontal stratification? By what natural event have they been placed contrary to their former arrangement, so as to appear in very steep declivities, or sometimes perpendicularly raised, without considerably disordering the parallelism, or decomposing even those layers of soft clay? There is, I confess, something inexplicable in their origin, or rather in the present condition of such strata.

On proceeding still farther to the East, near the borders of the sea, the coast is from three to five fathoms and upwards in height; being irregularly diffevered, and the lower part being, for nearly four-fifths of the whole elevation, composed of yellowish and grey layers of loam or clayey mire; some spots of which, towards the bottom, are of a light dove-blue colour. In its undulating direction that approaches the horizontal line, it is interspersed with a few thin layers of ochre and nodular iron-ore; while it is intersected with thin veins of spar running obliquely in various directions, and frequently in the form of a fan. This layer of clay appears to have been furrowed into small trenches by the undulating motion of the water, at a time when it was covered by the sea. Its inequali-

inequalities, however, are filled up with a later and completely horizontal stratum, which the sea has, by alluvion, deposited upon the old soil. Such bed is from one to two fathoms in thickness: it extends into the country at an inconsiderable breadth, generally having lowermost a bed of closely cemented pebbles mingled with testaceous fragments, and often also a congeries of shells beneath, in a tolerable state of preservation. On its upper parts, likewise, there is mostly a layer of similar concrete pebbles. Nevertheless, the greatest portion of this modern stratified mass consists of marine sand; and in the midst of the whole, or about the successive transitions of the fossils, we observed thin layers of shells, and indeed uniformly such as are still discovered in the Black Sea. — In those places, where the sea has undermined the incumbent softer clay, this recently formed bed of stone presents large broken pieces of wacca, which are scattered even in the water. On advancing farther, the lower ancient minerals exhibit the texture of sandstone; rise in a particular spot above the surface of the new alluvial stratum, which there terminates; then in another place imperceptibly decline towards the sea, in a south-easterly direction; but, for the most part, they discontinue to the North-west, and occasionally in an abrupt or precipitate manner. In more distant situations, the old layers have entirely been swept away through broad hollows extending towards the sea; so as to exhibit only a few isolated hillocks, which have apparently been surrounded by water. At length we met, at the distance of a few versts from Sudagh, about the middle of the bay, with the modern horizontal stratum, consisting of sea-sand, mixed with a congeries of testaceous sand
and

and half-broken shells ; the whole being combined with calcareous matter. It is situated between the rocky promontories which, on the side next Sudagh, produce the Althak-kaya, but on that of Koos exhibit the hilly ridge of Booyouk-Syrt ; while such recent fossil itself projects with two flat necks of land, the lower stratum of which is on a level with the sea, and almost entire throughout its whole bulk, without any modification ; especially in those places where it resembles a pudding-stone, consisting of the larger kind of rolled pebbles. Its constituent parts are, either sand-stone, or a grey and blackish calcareous rock, being the most frequent of the ancient stratified fossils ; or, likewise, very copious, brown-red, nodular pieces of iron-ore, that are often scaly and hollow, being arranged in lines within the soft beds of clay ; and, lastly, a few quartzose pebbles, the surface of which is slightly rubbed off. A similar congeries of fossils was, in every direction, evident along the sea-shore. The intermediate horizontal or obliquely running layers contained ribbed, cordate shells, as well as the common crested ones, small specimens of the *Ostrea Jacobæa*, and *Tellinæ* of different kinds : they are tolerably well preserved, being partly in an entire, and partly in a broken state, accordingly as the sea has deposited them ; and forming the transitions between most of the strata. This newly arisen mineral bed supplies excellent free-stone, which has already been employed in building the wine cellars of Sudagh : it also affords a new proof, that the waters of the Black Sea were formerly higher than they are at present ; and it is probable that similar instances will, at some future period, be discovered along its shores.

The adjacent dry and saline plain, which is in a few places still inundated by the high billows, and likewise the respective eminences, situated at some distance from the coast, exhibit no vestiges of this horizontal stratum; but, in all situation destitute of vegetable soil, there appear in a manner fluctuating, or even inverted, beds of clayey, ferruginous brown, or sandstone schistus, and, occasionally, also the rough calcareous rock. Such is the nature of the whole arid, saline tract, in which the village of Toklyk or Tokluk lies, together with its vineyards, about four versts distant from the sea, by a descending road: the latter yield a palatable liquor, and are separated on the East-south-east side from the dale of Koos by the Booyouk-Syrt; and, on the North and North-east, by the Tokluk-Syrt, the strata of which properly pass through this region: towards the West, they are bounded by the Alshak-kaya; and, in the southern quarter, by the sea-shore.

On an eminence occurring in these environs, between the coast and the village of Tokluk, there is a remarkable rock, measuring several fathoms in height, visible at a considerable distance, and consisting of vast masses of dissevered lime-stone wacca; some of which continue nearly in their natural position, while others are inverted. Among the Tartars, it is known by the name of Paralam-kaya, or the Broken Rock; and appears to be a projecting point of a former ridge composed of such fossil. A few hundred paces to the South-east of the latter, on an arid plain surrounding the hillock, we took notice of a singular and apparently very ancient cemetery, which differs from any other discoverable in Taurida, excepting that in the valley of Koos; and is therefore not of Tartar

origin. First, in a straight line nearly due East and West, and thirty-two paces long, there are about ten tombs, enclosed above ground with flat stones, which are placed in the soil on their edges, and in a manner divided into compartments. Four of these sepulchres are squares of four arshines, or nine feet four inches; but five others, though of a similar length, are only two arshines in breadth, and consequently oblong. Their succession is irregular; and, in two places, there is an intermediate space of two feet four inches. The following is the order in which they are disposed from East to West, as well as their respective distances from each other:

2, 1, 4, 1, 4, 2, 2, 4, 3, $4\frac{1}{2}$, 2, 2, arshines.

At their southern extremity, some of these monuments have probably been provided with a larger stone; and, at the distance of almost two fathoms to the South-west of the row above specified, we met with another series of three detached tombs. Towards the eastern end are, a low hillock surrounded with stones, and two isolated squares also enclosed with flags standing on edge; but which, on their eastern side, exhibit a larger stone in an erect situation. The Tartars suppose these burial-grounds to belong to a former colony of Jews; though it may, with more probability, be conjectured that they originate from another ancient, and not very numerous nation.

The road to Toklyk takes a circuitous course along the shore, on account of the many rain-water hollows that descend from the barren Tokluk-Syrt. It discovers, for the most part, a clayey saline soil, and throughout the deep glens we observed the horizontal beds of argillaceous schistus interspersed with

with a similar sandy fossil; abruptly declining towards the North-west; sometimes standing on edge; frequently exhibiting uniform streaks and layers of kidney-shaped iron-ore; and in a few places also the *Lodus Helmontii*. The soil in the vineyards appertaining to the village, as well as in those of Sudagh and Koos, has been completely divested of its saline property, by constant irrigation. The tallest shrub in the low grounds is the *Tamarix tetrandra*; while the *Astragalus Poterium* and *Harmala* grew here in great abundance: many spots also produced the beautiful *Hedysarum* with red-veined blossoms; and an elegant *Carduus*.—On proceeding towards Koos, the large mountainous ridge, that advances into the sea, and is termed Booyouk-Syrt, appears on the right of this road.

The fine valley, environing the village of Koos, has a warm site, and is adorned with numerous gardens and vineyards, which yield the strongest wine in Crim-Tartary. It commences immediately above the village, between the mountains of Tokluk-Syrt and Porffuk-kaya; extending as far as the sea to the length of four versts and a half. The whole dale divides itself, near the village, properly into two broad glens. That on the West proceeds along a hilly ridge which terminates with the shore at the foot of the lofty mountainous chain, called Kopses-Syrt, or Kopsaly, likewise advancing into the sea; while it affords a passage to a nameless rivulet arising from an elevated source above the village, and serving to irrigate the gardens. On the other hand, the broader and principal valley, proceeding directly from the village, spreads and surrounds an isolated long ridge, presenting flat hillocks, and termed Kadirly-Burun; on the southern point of which

are a demolished hermitage, and a Greek church formerly dedicated to St. George, but at present in a ruinous state. The western branch of this dale expands to the breadth of one verst; and both, being again combined, run progressively narrower towards the shore; where an excellent vineyard, denominated from its late possessor, Bostandshi-Oglu, opens a charming prospect towards the sea, and at the same time forms the outlets of the streams passing through such dale. In this vineyard rises a copious spring: its water covers every soil over which it flows, with a grey topsoil, that combines more intimately with the clayey surface in proportion to its distance from the source, and thus renders it softer. To the left of this place, the vineyard-valley is confined by a height on which the piquet of Kozaks is stationed; and thus it is separated from another short but wide dale: the latter is intersected by deep rain-water hollows, and is overgrown with a tall luxuriant *Salsola ericoides*, with the caper-bush, wormwood; and more sparingly with the *Nitraria*. On the right, the more contracted vine-bearing vale, that commenced at the village, terminates on the shore, together with its accompanying brook, which is frequently dried up near its mouth. All the vallies, above described, abound with the most beautiful and fertile vineyards; and the Tartars, inhabiting the neighbourhood, are justly reputed to be the best cultivators of vines in the Crimea.

This valley is, at a certain distance, surrounded by lofty mountains, which protect it from the cold north-westerly, northern, and north-east winds, without depriving it of the beneficial influence of the solar rays: they uniformly extend
towards

towards the South-east, in almost parallel lines ; and, on the western side, consist of the Tokluk-Syrt, Beeyouk-Syrt, and Kopfaly. To the East, there is uppermost the Porffuk-kaya ; which, like those before stated, is composed of horizontal beds of clay and sand-stone, having a more gradual acclivity ; next follows the rocky eminence, called Pandsharkaya * ; behind it, farther towards the sea, appears mount Etschkidagh, with its high prominent masses of rock placed on edge ; and, at a still greater distance, the Karadagh continues with a prolonged ridge, which on this side is perfectly black, being covered with lofty and pointed though dissevered rocks, and extending into the sea, where it forms remarkable precipices. Lastly, the low and likewise craggy cape of Keeyk-atlama projects near the bay of Kaffa, and terminates this magnificent prospect, that may be enjoyed in its whole extent from the guard-hill above mentioned.

Concerning the culture of the vine in the vallies of Koos and Sudagh, I shall separately treat in a subsequent chapter. The grapes, produced in the former, attain to maturity at an earlier period, and afford a sweeter and stronger wine. Nevertheless, that of Koos is inferior to the other, both in point of flavour and durability ; which may probably arise from the peculiar richness of the soil, so that the vines bear more abundant fruit than in the vale of Sudagh.

Notwithstanding the late emigrations of many Greek families, which formerly resided in the village of Koos, and em-

* *Pandshar*, in the Tartar language, signifies Sorrel, a plant which is said to grow abundantly on this mountain, though it rarely occurs in other parts of Crim-Tartary.

ployed themselves in raising vines, it still has a numerous population ; but the abandoned houses are at present in a ruinous condition. Beside a Greek church, situated on the eminence that separates the two vallies near the village, the latter has a handsome metshet, with a well-built *minaret*, or brick-tower, in an octagonal form. Several excellent fountains once adorned this place, but most of them are now in a dry state. For the erection of houses, and the construction of walls to enclose their vineyards, the inhabitants of Koos are amply supplied with free-stone from the neighbouring mountains. These also furnish them with the numerous large flags and stone columns placed in their cemetery ; as they are of a very hard texture, and resemble those described among the fossils near Sudagh.

The road to Otuus, which is a continuation of that proceeding from Tarakatsh, already mentioned, becomes dangerous, when passing the successive steep mountains in a carriage. Nevertheless, it is frequented by the Tartars, who dexterously drive their two-wheeled arabas down such roads, to which their draught oxen are accustomed. This road conducted us through the valley situated above Koos (where we again met with a few orchards) over a rocky eminence of the Pertshamkaya, which here forms a considerable new ridge of the marmoraceous grey lime-stone, taking a northerly course towards the Armenian convent, in the vicinity of Efski-Krym. Another rocky eminence, before alluded to, and termed Eltegenn, exhibits on its elevated surface an old wall of defence drawn across one of the ridges, the north-western extremity of which rises with a three-pointed rock, called Madhill ; and the latter is obliquely perforated with a triangular

gular hole admitting light throughout. On the heights grow several species of *Astragalus*; and, from the summit of the ridge, we descended by a very steep road, on the side of a prodigiously deep and woody dale, where, among other trees, the *Pyrus orientalis* was particularly numerous. This glen, which leads to the valley of Otuus, separates the foot of the Pandshar-kaya, and of another hill from the opposite high rocky mountains Kyfiltash-kaya, and which likewise appear to consist of calcareous rock. The former dale has, from an ancient residence of a Turkish General, received the name of Sarai-deré; in the vicinity of which, opposite to Otuus, we observed the ruins of a metshet, or house of prayer. The limestone rocks, however, now terminate near a spring, where the road attains the highest point. They are succeeded by uniformly soft layers of clay and schistus, in which such dale has been formed, together with its collateral glens. The fossil just mentioned is, in every direction, interspersed with thin strata of a ferruginous brown schistus, which are somewhat more level than those near Sudagh, or even horizontal; deviating considerably in their extent, and being often in a manner dislocated. Some beds of iron-ore also occurred in a few places.

On account of its situation between lofty mountains, as well as from its oblique exposure to easterly winds, and the meridian solar rays, the valley of Otuus is not so favourable to the culture of vines as those of Koos and Sudagh; though its soil is apparently superior. The grapes, and other fruit produced in the orchards of this neighbourhood, are for the most part carried

carried to the market of Kaffa; where the wood and timber obtained from the abundant forests on the surrounding mountains, likewise meet with a ready sale. The dwellings are divided into two small villages, at a short distance from each other; namely, Upper and Lower Otuus, in the latter of which is a metshet. There is a road leading to the former from Koos through another dale, known by the name of Suakhan-deré.—The valley of Otuus is bounded on the South-west by the hills Mall-kaya and Papas-tepé; on the North-east, by that of Saree-tshesmé; but, on the East and South-eastern side, by the great and very extensive Karadagh, which projects with serrated rocky summits. On the whole, it is pleasantly situated, and equally adapted to tillage and horticulture; being watered by the small rivulet Otuus.—Many of the sand-stones, composing the adjacent mountains, are marked with impressions of blackish splinters and the stalks of plants; or are interspersed with globular stones in the manner of breccia. Large fragments of rock are sometimes precipitated from mount Mall-kaya; the limy sand-stone beds of which advance in a direction North-west and South-east, declining at an angle of forty-five degrees. In the disengaged pieces, I remarked veins or scales of calcareous spar, nearly a foot thick, and covered with lenticular crystals. The tomb-stones of this place consist, like those at Koos and Sudagh, of long flat, square columns, remarkably hard, and selected from the layers of sand-stone. They are naturally combined with calcareous matter, sometimes partaking of a ferruginous nature; and emit a sound on percussion. On measuring some of these columns,

columns, which are likewise employed as land-marks on the heights between Sudagh and Koos, I found them more than two fathoms above ground; though they were scarcely fourteen inches broad, and somewhat less in thickness.

I proceeded in my journey from Otuus, with a view to explore the extremity of the ancient heights, as far as the eastern foot of the last high mount Karadagh, where a Tartar village formerly stood, together with a metshet, and a handsome fountain. The most convenient road winds around the basis of this large mountain, towards the North. On attaining the summit, we perceived, to our left, in the north and north-eastern quarters, the white mountains of recent calcareous strata; which, with the post-road leading from Eski-Krym to Kaffa, now approach the sea; and, near the latter place, completely cover the older eminences; but are here, as in other parts of the Crimea, separated from them by an extensive open valley. They form, in these environs, a considerable hill; the southern rocky terrace of which is termed Sareekaya.

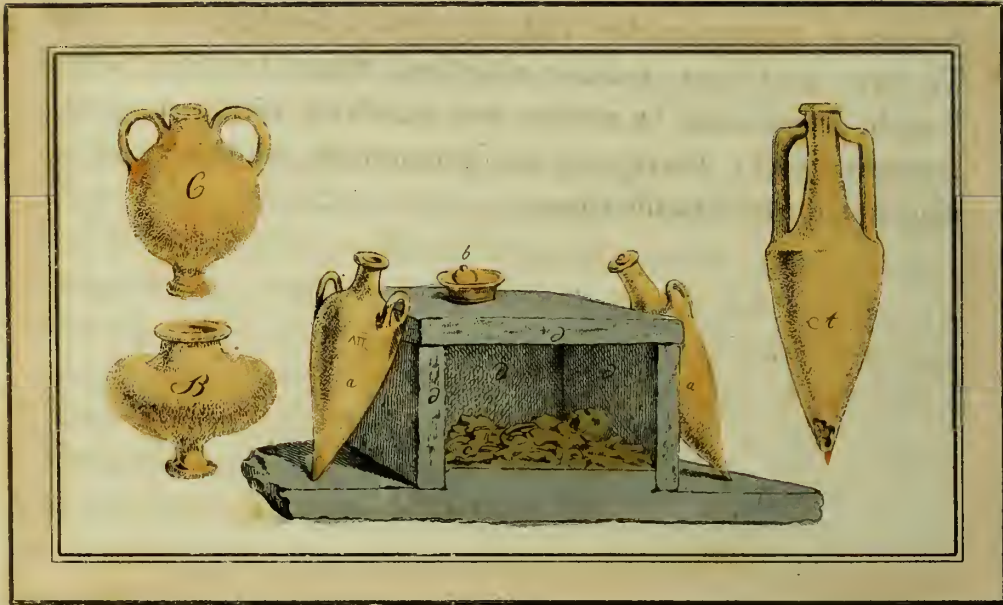
The most lofty ridge of the Karadagh presents conical rocks, and consists of the rude grey lime-stone, which, on friction, is somewhat fetid; but its eastern foot is composed of a clayey stratum, intersected by several saline springs. There is, however, a well of sweet cold water, issuing from the highest calcareous rocks, and properly enclosed with free-stone. In its vicinity lie the ruins of the village of Karadagh, on the mountainous declivity. The old road, conducting to this place, is unsafe; because the ground is undermined by currents, and

many holes occur on the surface. In front of the Karadagh, the round lofty mount Aseeis lies to the South; and has received that appellation from a priest who was in the habit of praying on such eminence, where he is interred at his request; and, as he died with the odour of sanctity, his tomb is visited by Tartar pilgrims.

On the eastern side of the Karadagh, a wide open dale extends towards the sea. It commences in the vicinity of Eski-Krym, and is in this country denominated Küük-tepé, or the Green Valley. Here is situated a small village on a descent from the shore; but near the sea appears a moderate height, consisting partly of sand-stone, and exhibiting veins of an almost grass-green, sometimes red-streaked *Jaspis*, though seldom in a pure state. It is semi-transparent, when viewed on edge; and a volcanic production discovers itself in a blackish porous *Amygdaloides*, the cavities of which contain spar and chalcedony. Numerous roundish fragments of both the fossils last mentioned, are likewise scattered along the strand; and this *Jaspis* is the only mineral in all Taurida, which tends to prove the effects of very ancient volcanos.

Beyond the valley above alluded to, and on this side of a sloping, inconsiderable promontory (behind which lie Kaffa, and a bay of the same name), we descried a narrow isthmus covered with rocky hillocks, and far advancing into the sea. It is by the Tartars termed Keeik-Atlama, or the Roebuck's Leap; and here was erected a fortification known by the name of Dva-Yakornoi Battery, or the Two-Anchor-Battery. From such promontory I obtained large pieces of a

femi-petrified charcoal that are thrown up by the sea, and are likewise found in one of the sand-stone strata. With this eminence terminate the old stratified mountains of Crim-Tartary; and thus I have described them in their whole length, amounting to nearly two hundred versts along the southern coast; where they are surrounded by the more recent horizontal stratifications.



Journey through the Interior of the Crimea, along the Peninsula of Kertsh, and to the Isle of Taman.

AFTER having completed my excursions over the more elevated mountains of Crim-Tartary, I had still to explore, not only the modern stratified heights together with the adjacent plain, but also the peninsula situated towards the Bosphorus, with its abrupt hillocks, and the opposite isle of Taman, which in many respects deserves attention. Such were my last pursuits during the summer.

The environs of Akmetshet, as far as Karassubasar, the second town of importance in the Crimea, present extensive level

level grounds between the calcareous eminences, or at least a greater variety of plains than of mountains. From the Salgir to the rivulet Suya, the hills are seen at some distance on the left, precipitately declining to the South; while, on the right, they form gentle declivities covered with herbage. In the spring, these plains are generally embellished with flowers of various shades, and in such abundance as to exhibit, at a distant view, whole flats overspread with the blossoms of the prevailing plant, according to the nature of the soil. Thus, for instance, the *Pania multifida*, or *Papaver*, produces a bright-red veil over the soil; the *Vinca*, or *Salvia nutans*, makes a perfect blue; the *Euphorbia Vaillantia*, or *Ranunculus*, is entirely yellow; the *Asphodelus Tauricus*, or *Myagrum*, appears whitish green; and the tracts of such colours, being alternately relieved with green, afford the most variegated and pleasing views. The native horse-raddish of this country, or *Crambe orientalis*, is very frequent between the Salgir and the Suya, where its roots often exceed the size of a man's arm. The banks of the rivulets we crossed, in their course towards the Salgir, present numerous Tartar villages: the names of the former, in their natural order, are as follow; namely, the Bala-Salgir, which sometimes swells considerably, in consequence of heavy showers; the Tshoountshu; the rapid Beshterek; and, lastly, the Fondukly, that discharges itself into the Suya; and on the upper banks of which, in the vicinity of a village bearing the same name, Prince Potemkin has caused a fine vineyard to be planted with Hungarian vines. Between the Bala-Salgir and the Tshoountshu, the Tauridan white asphodel covers the ground, as if it had been regularly sown.

hind the steep terraces of the heights, we met with an uneven country, intersected with hollow grounds: its surface is over-spread with a fertile vegetable mould, extending towards the adjacent plain; and, between the rivulets Tshoountshu, Beshterek, and Suya, which flows into the Salgir, there appear in many places the calcareous layers, exposed by large flats, and in a manner cast into one piece. These strata are mostly porous, sometimes resembling tophus, and being generally composed of testaceous sand and rubble. As their bulk is considerable, the Tartars employ them in erecting the walls that enclose their yards and meadows. In some beds, the substance of the shells is decomposed, or swept away by the water, so that their impression only remains in the calcareous mass. Others, again, are mingled with quartz and various particles of gravel. A very peculiar kind of brittle, light, and ochreous-yellow lime-stone is obtained from a quarry near the village of Burnash; where the two rivulets last mentioned unite in the vicinity of the Salgir. This fossil is loosely caked together of broken, fine, and very friable shells: when moistened, it may be crumbled by the hand, or hewn into different forms with a hatchet, or likewise be easily divided by the saw. Although it acquires some degree of hardness, on exposure to the atmosphere, so that houses have been constructed of such material, yet it is permeable by air and water; and, after a dwelling has stood for some time, it is remarkable that the rain, absorbed by the walls, dissolves the calcareous particles; and these gradually cement the square stones to each other.

In the vicinity of the Suya, or twenty-one versts from Akmetshet, a village has been established by some Russian colonists, whose

whose moral character deserves no commendation. The whole region is completely divested of wood ; but, on approaching the mountains, at the distance of nearly eight versts from the road, we again met with trees, and shortly after with forests. Both arable and meadow lands are here throughout of an excellent quality, and yield good crops ; but the frequent droughts, occurring in Taurida during the vernal season, too often disappoint the expectations of the husbandman.

Beyond the rivulet Suya, we travelled over an eminence that conducted us to the small brook Manta ; and, about six versts from the former, we crossed a more considerable stream, named Burultsha : like that of the Suya, it issues from a high part of the mountains ; flows towards the low country watered by the Salgir ; and almost disappears beneath the soil, previously to its confluence with that river. None of the Crimean streams presents such variations in the volume of water as the Burultsha. Its bed, being covered with pebbles and gravel, is at least sixty fathoms broad ; though, in general, a very small current only passes over this extensive channel. Nevertheless, after violent showers, or when large quantities of snow dissolve on the heights, the whole bed is sometimes filled to the height of an arshine, and the brook exhibits a rapid torrent.

After crossing the rivulet Suya, the country becomes remarkably level ; and an extensive plain opens in front of the lofty Alps of Temirdshi and Karabeé, rising progressively, without forming considerable hills ; so that the whole chain of the eastern mountains, together with the Tshatyrdag, may be distinctly surveyed. This flat region, which also expands in a southern direction, has scarcely any layer of stone on its surface,

surface, and presents rich pastures, meadows, and fields. In February, the *Colchicum vernalis*, a plant peculiar to this country, abundantly flourishes in the black soil, and appears here at an earlier period than the other species of *Crocus*.

On advancing towards Karassubasar, we descried, to the left of our road, a chain of calcareous mountains, gradually rising, and proceeding upwards of eight versts in length, to the vicinity of the town; when it takes a more southerly course, and joins the heights known by the name of Akkaya. These eminences unite, beyond the Karassu, with others consisting of lime-stone and chalk; and which extend from North-west to South-east around the spacious low ground wherein the town is situated; forming a circle of at least twenty versts. At the sides of such deep glen, there appear throughout high terraces, composed of chalk and marl; one corner of which at length combines with the ancient, lofty, and wooded mountains, whence the brook Indal derives its source. The cretaceous heights contain gradual layers of blackish pyrites, frequently in a concrete state with a white marly fossil; in which it is difficult to discover either transmutation or transition, but rather an original mixture of siliceous and clayey matter with chalk. The stratified fossil, when disengaged from the chalk, generally exhibits in the middle a pure black *silice*; being sharp on its edges, and covered both above and below with a snow-white crust; which, near the pyritic substance, possesses the hardness of flint, and scarcely effervesces with acids; though it becomes softer towards the surface, where its effervescent property is progressively more evident. — These cretaceous hills, being exposed to the meridian sun, produce plants of uncommon

mon beauty. Among them were particularly conspicuous, two elegant *Hedysara*; a *Crepis* bearing rose-coloured flowers; a few rare species of the *Gallium*; as well as the following, that generally grow on chalky-cretaceous eminences; namely, the *Salvia Habliziana*, *Convolvulus biflorus*, *Scabiosa cretacea*, *Astragalus Austriacus* and *multicaulis*, *Scutellaria orientalis*, and all the varieties of the *Veronica Austriaca*. It is, however, to be regretted, that only a few of these handsome plants are suffered to arrive at perfection; as they are in most summers destroyed by herds of cattle depasturing in these regions.

The plain, in which the town of Karassubasar is erected, appears very low, when contrasted with the eminences that surround it; nay, even on its western side, where no hills occur, the flat country perceptibly declines as far as the banks of the Saris, which rivulet we crossed by a bridge built of free-stone. On account of the adjacent cretaceous mountains, the place is excessively hot in the summer; as, on the contrary, during the winter, and after heavy rains, it is filthy beyond description: the latter inconvenience is farther increased by the confluence of several rivulets, and of the canals conducted through the town for the purpose of irrigation. Notwithstanding these circumstances, and the great want of potable water, the inhabitants of Karassubasar are not, in any remarkable degree, exposed to diseases; though we observed among them few persons of a healthy complexion. The streets, like those in all Tartar towns, are narrow, irregularly built, and mostly lined with the walls of enclosed premises. Some tolerable dwelling-houses, the large mercantile halls raised with stone, and the metzkets, together with their turrets, contribute to give a respect-

respectable appearance to this city ; which exhibits the most advantageous view on descending towards it by the southern road, down the mountains, along the banks of the Tunas. From such position, I have caused the prospect, communicated in the thirteenth plate, to be drawn ; so as to represent the eastern quarter of the town.

Karassubafar contains twenty-three Tartar metshets ; three churches, one of which belongs to the Armenian Catholics ; and a synagogue. There are farther, in this place, twenty-three khans or mercantile halls of various sizes ; three hundred and ten booths or shops ; twenty-three coffee-rooms ; and nine hundred and fifteen dwelling-houses. In the town, together with its neighbourhood, are seven mills, turned by different streams. The principal warehouse for the dispensation of medicinal drugs throughout the Crimea, has been transferred hither from Yenikalé, since the year 1796 : it occupies a convenient house, with an excellent garden adjoining ; which formerly were the property of General de Rosenberg. On the banks of the rivulet Tunas, above the town, a palace was erected for the late Empress ; but it was subsequently granted to Prince Besborodko, together with the adjacent lands ; and has lately been rebuilt by its present possessor, Lambro Katshoné.

The number of male inhabitants, settled at Karassubafar, does not exceed fifteen hundred ; among whom are nearly one thousand Tartars ; upwards of two hundred Jews, chiefly Talmudists ; a similar proportion of Armenians, of whom less than one half are Catholics ; about one hundred Greeks ; and a few Russians. Besides, there are rather more than two thousand females ; and the strangers of different nations,
such

such as Greeks, Armenians, Italians, Jews, and Russians, may be computed at about two hundred individuals. In addition to these, should be mentioned the handsome regiment of dragoons quartered in this town; and for whose accommodation, barracks and stables have been built in the suburbs.

As the commercial intercourse between Karassubafar and the neighbouring villages is very brisk, every commodity may be purchased at a cheaper rate than in other markets of Crim-Tartary. Artisans and manufacturers have established themselves here in considerable numbers. The principal among them are tanners of morocco and other kinds of leather, wax and tallow chandlers, soap-boilers, potters, brick and tile-makers, and smiths. The place is amply supplied with fruit and vegetables, not only from the adjacent orchards and gardens; but the former productions, in particular, are likewise brought hither in abundance from the mountainous parts, and sold at reasonable prices. Grapes are, during the autumn, so plentiful, that many inhabitants, especially the Jews, advantageously express their juice, and convert it into wine; for which purpose they employ vessels, hewn out of the solid lime-stone. Cattle of every kind are brought to the weekly markets in such numbers, as to induce the proprietors to dispose of them at a moderate value.

Many buildings are here erected of unburnt bricks, which are cast in moulds of a tolerably large size. Thus houses may be raised more expeditiously, and at a less expence, than those constructed with loam and straw; a method that occasions unnecessary trouble and loss of time. In proportion as such bricks are exposed to the atmosphere, the walls built of them

become progressively more solid and durable. Since the Rufians made themselves masters of the Crimea, the vast Tartar cemeteries have, both here and in other towns, nearly been divested of their tomb-stones; most of which, being hewn, have been employed in the erection of dwellings. This has particularly been the case with those found in the vicinity of Karassubasar. Lastly, the country, situated between the Great and Little Karassu, affords an excellent lime-stone, for building and various other purposes; as the calcareous beds are in a manner cast into large masses, whence columns and squares of almost any dimension may be hewn out of a single block.

Directly behind the town, we crossed the Great Karassu, or Black Water; the remarkable source of which rises from an arched rock, not above sixteen versts distant from Karassubasar; though it has been inaccurately delineated in the Letters written by the late Lady CRAVEN*. This river is not in every respect equal to the Salgir, even during the prevalence of high floods. Mountains, formed of cretaceous and lime-stone beds, immediately commence on the opposite side of the former stream. Many layers of blackish pyrites are here likewise deposited within the chalk, and exhibit a white incrustation. The most lofty series of cretaceous strata, in this place, is the Akkaya, or White Mount, on the left of our road: its southern and western sides present a gigantic square wall

* *A Journey through the Crimea to Constantinople, in a series of Letters from the Right Honourable Elizabeth Lady Craven, to His Serene Highness the Margrave of Brandenbourg, Anspach, and Bareith. London, 1779. 4to. p. 169.*

resembling an artificial fortification ; though it more gradually declines to the North. This hill is, in the Russian language, commonly termed Shirinskaya-gora ; because it served as the usual rendezvous to the discontented Murzes or Nobles of Shirinski, when they revolted against the reigning Khan. We perceived a cavern in the abrupt southern terrace of the mountain, immediately above the rubble or fragments covering its foot ; and another, though inaccessible one, appeared in a still higher situation. In a deep hollow towards the western declivity of the eminence, there generally occur flints with a white crust : they are lodged within the chalk, which is peculiarly soft, and adapted to many useful purposes ; though, in other situations, it is almost uniformly coarse and gritty. A saponaceous fossil, similar to the Fuller's earth mentioned in a former part of the present volume, has also been discovered in this country : farther, a large proportion of selenite is here scattered in the clay ; which the Tartars employ, in a calcined state, for whitening their fur dresses.

The post-road, which hitherto proceeded due East, now takes a north-easterly direction, as far as the Little Karassu, first over a bed of chalk, and afterwards over a stratum of lime-stone, apparently cast in one solid piece : the surface of the latter is exposed in considerable flats ; being in a manner washed by the waves of the sea, and in its superficial excavations presenting only small portions of vegetable earth ; in which, among other handsome plants, we discovered a diminutive *Iberis* with succulent, cylindrical leaves.

In the vicinity of the Little Karassu, the road turns to the South-east. Both the banks of this rivulet consist of hard

calcareous strata; beneath which several grottos have naturally been formed by the water. At the distance of twelve versts from the town of Karaffubafar, the opposite bank, on the right, presents a rising lofty ridge of lime-stone; which, as has already been mentioned, extends to the South-west, around the spacious valley of the same name. The proximate part of the ridge, which is well covered with wood, abruptly declines towards the dale, and is termed Uffun-Alan. From its summit, though frequently enveloped in clouds, there is an extensive prospect, not only of the whole flat country in the environs of Karaffubafar, and to the North over the fronting eminences, together with the immense plain spreading towards Arabat, but likewise over the Sivas, the sea of Azof, and to the North-east of the peninsula of Kerts. This magnificent view exceeds all imagination; and is bounded on the East only by the high calcareous mountains of Agermysh, appearing in the vicinity of Efki-Krym, and the woody heights on which the Armenian monastery is erected; while, towards the South, it is terminated by the lofty hills near Ufkut. The whole eminence is composed of horizontal stratifications of lime-stone, often lying very near the surface; which is nevertheless embellished with the finest verdure and rich flowers, as well as with a variety of thick woods. Its proprietor, General Kachofsky, since promoted to the dignity of a Count, has caused many passable roads to be made through the forest, which might be easily converted into pleasure-grounds. Formerly, an Armenian convent stood on an adjoining elevation, and its vestiges are still discernible. Among the trees and shrubs, spontaneously growing here, the following are the most conspicuous;

cuous ; namely, various species of oak ; white beech ; lime or linden-trees ; trembling poplars ; winter and summer pear-trees ; wild apple and cherry-trees ; round plum-trees ; floes ; numerous hazel-nut and cornelian cherry-trees ; water-elder ; *Ligustrum* ; *Cotinus* ; some varieties of the *Evonymus Europæus* ; and others interspersed with the native vine and black-berry. — The most remarkable plants are, the *Betonica*, *Agrostemma coronaria*, *Ferula orientalis*, *Selinum Monnieri*, *Gentiana cruciata*, *Chrysanthemum corymbiferum*, *Polygonatum*, and a beautiful *Lathyrus* : at the level base of the mountain, we noticed the large *Fumaria* above alluded to, and three different kinds of the *Pæonia* ; one of which is the common peony with broad leaves, indigenous to the Crimean mountains ; the second is the *P. tenuifolia*, distinguished by its thin leaves ; and the third is evidently an intermediate variety that has spontaneously arisen from the two former flowering at the same time ; and of which I have given a representation in my work, entitled, “ *Flora Rossica* *.” As an instance of its improved state, the variety last mentioned never produces ripe seed ; and is, therefore, rather scarce. On the whole, it deserves to be remarked, that all the environs, watered by the two rivers Karassu, are richly diversified with plants.

About fourteen versts from Karassubafar, on the declining banks of the Karassu, we arrived at Asamat, a pleasant country-seat of Count Kachofsky, before mentioned. His estate comprises upwards of ten thousand Russian dessatines of the finest arable and meadow lands ; on which, beside two Tartar villages, there is one established by Russian colonists, and another

* Vol. I. Part II. Tab. LXXXVI.

by newly-settled Nagays, known by the name of Melek. The last of these has a population exceeding five hundred persons; and the road passes in its vicinity over gradually rising heights to the next stage, called Burunduk (twenty-five versts distant from Karassubasar): here a post-house is erected on the banks of the Bulganak; which, in conjunction with another brook, flows into the Sivash.

We now quitted the direct post-road, leading by Eski-Krym to Kaffa and Kertsh, in order to travel over the mountains to Sudagh; and this southern tract I propose immediately to describe.

On the eminences near Burunduk, there are quarries of a hard marly stone, fit for flags, and containing scarcely any petrifications. In the neighbourhood of the brook Indal, or Yendol, these heights are succeeded by considerable calcareous mountains, one of which is peculiarly conspicuous. It projects near Kishla with craggy lime-stone rocks; is by the Tartars denominated Borkaya; and exhibits a cavern, together with many blocks of wacca, that have been precipitated from its upper parts. It is evident, from the inspection of the hill just alluded to, that the horizontal strata, on approaching the ancient elevations, progressively rise towards the South. Within the hollows and rocky fissures of this mount, there are found numerous swarms of wild bees; such as are likewise frequently discovered in the cavities of trees and rocks of other alpine parts. In the environs of the calcareous mountains, here described, fogs are very prevalent, especially during the cold seasons; and the valley of Indal, though agreeably situated, is notoriously unhealthy, on account of its uncommon humidity. On the
other

other hand, the whole country, watered by the rivulet Indal, presents excellent meadows, pasture-grounds, and black arable lands. A regiment of dragoons was formerly stationed at Kishlau, but their barracks and stables have been suffered to fall into ruin; and we could now only trace the vestiges of the garden that was once laid out near the head-quarters.

The hills, appearing beyond the Yendol, become successively higher: they gradually approach each other, and are occasionally covered with woods, especially those lying near the banks of the brook Soukfala, which discharges itself into the Yendol. Instead of the almost horizontal strata of limestone, hitherto met with, the old stratified mountains now arise: they incline more precipitately in proportion to their farther extent, and at length form nearly perpendicular layers; which consist alternately of argillaceous schistus with ridges of sand-stone, breccia, and at length of lime-stone rock. Their whole breadth, from Soukfala to Sudagh, in a straight line, amounts to about sixteen versts; though the circuitous road through the vallies is a tract exceeding twenty-five versts. On the banks of the Soukfala, in a very fertile country which is amply provided with wood, we passed a populous village established by Russian sailors and soldiers, who have obtained their discharge. In the deep hollows, occurring between this place and the country-seat of Shakh-Murfa, situated near the brook Kuru-Yendol, to the left of our road, the mixed strata of marly and schistous clay decline rather precipitately towards the North-east; and, in some places, exhibit the vestiges of charcoal. At the height parallel to that of Shakh-Murfa, there lies a marly free-stone beneath the bed of clay.

clay. Immediately after, we crossed another eminence leading to the village of Elbusly; where, beside a Tartar village, numerous Russian colonists have, at a great expence, been settled in the vicinity of a small rivulet and fine springs, by Admiral Mordvinof, the present proprietor. The Tartars of the village last alluded to keep many buffaloes, that are seldom found in other parts of Crim-Tartary; and which, like those reared in Moldavia, attain only a small size in this cold climate; being well covered with black hair; while the Persian buffaloes are almost naked. These animals are bred not only with the view of obtaining their rich milk, but also on account of their superior strength in carrying heavier burthens than common cattle.

On departing from Elbusly the woody mountains present a great variety of springs, and rise progressively. They contain, however, no remarkable plants, excepting the large *Crocus sylvestris*, that flowers in the month of October. Among the considerable hills, between which the road conducted us to the village of Souksu, being six miles distant from the last place, there is a long ridge particularly conspicuous, near the source of the rivulet Souksu; forming a lofty bank of rocks in a crested shape; being from five to ten fathoms thick, and upwards of fifteen fathoms in height; extending nearly from East to West, and inclining towards the South, at an angle of fifty degrees. The whole ridge consists of calcareous pudding-stone, divided into two layers; which are, in some places, intersected by oblique veins of calcareous spar. A few similar ridges occur in the western mountains, the constituent parts of which I had no opportunity of examining; but they apparently resemble the former.

The





The road now follows the lower banks of the Soukfu; along which the hollows and interfections of the mountains, in every direction, exhibit layers, partly of breccia, and partly of sand-stone: they proceed almost in a line from East to West, and sink rather abruptly. Near the village of Soukfu, there likewise appear intermediate beds of basaltic wacca; and the schistous clay is alternately diversified with strata of stone. — At the distance of eight versts, in the vicinity of the village termed Tarak-tash, our attention was attracted by the lofty and protracted crest of rocks, known by the same name*. It is composed of a coarse layer of ferruginous, often very incoherent, pudding-stone; the spherical stones of which are sometimes larger than bombs. This bed of fossils farther extends in a lower situation westward, crossing the road, and beyond the valley watered by the Soukfu. The village itself is built at the foot of the mountain, which displays the crested rocks. On account of its pleasant situation, and the remarkable figure of the hill, I have communicated a view of both in the fifteenth plate. Opposite to this mount, on the western side, appears the high, pyramidal barren rock of lime-stone; which, from a singular cliff attached to it, and somewhat resembling a frog in a sitting posture, is denominated *Bakatash*. On advancing a few versts with the current of the rivulet, we descended into the rich vine-bearing valley of Sudagh, above described: and thus again approached the sea-coast.

* *Tarak* signifies a Cock's comb, and *Tash* denotes a rock: hence the shape of this rocky eminence justly deserves such name.

In order to continue my narrative, without farther interruption, I shall return to the principal road.—Although Eski-Krym is, by the usual mode of travelling, not less than twenty-four versts distant from the last stage of Burundshuk, yet there is a more direct road from Elbusly, by the way of Shakh-Murfa, which does not exceed fifteen versts. We proceeded from the last mentioned place to Eski-Krym, along a ridge, extending between two vallies that intersect it from the wooded and more elevated mountains. These consist, to the left, of the lofty and protracted calcareous hills of Agermish, the chain of which terminates towards the plain country with a less considerable hill advancing to the East, and called the Barren or Tash-agermish, that lies in the vicinity of Karagos. To the left are the thickly wooded eminences, which join the lofty mountains stretching towards Koos and Otuus. On attaining the summit of this ridge, we descried an Armenian convent, situated in a high forest; and which is the residence of an Archimandrite of that nation.

The Eski-Krym, or Old Crimea, properly so called, and in the Russian language, Staroi-Krym, is situated, together with its extensive ruins, in a fertile plain imperceptibly declining from the lofty ridge, and is probably the ancient *Cimmerium*. Our attention was first excited by the remains of two Tartar metshets lying near the road. In their vicinity, we noticed a building erected over a considerable and excellent spring; for the restoration of which, as well as for the construction of an upper room appropriated to the reception of visitors, we are indebted to the brave and respected General de Schütz. Next follow the remains of a more capacious Armenian church, the walls of

of which form an oblong square, supporting an octagonal arched cupola : on its eastern side, internally, there is a projecting niche intended for the altar ; but, on the western extremity, it presents a vestibule consisting of two divisions. On the same side of the suburbs are the barracks for a regiment of soldiers, but which are now empty, and in a ruinous state ; farther, a vineyard planted with Tokay vines. Among the scanty and almost effaced ruins of Eski-Krym, are those of a Tartar bath ; of two methets ; of a Greek church : and, near the banks of the rivulet Serensu, which glides along the southern part of the town, there is an old empty palace of a moderate size, formerly belonging to the Crimean Khans, and which is still in tolerable condition. A Russian Bishop resided here till the year 1800 in a new edifice, which is now likewise uninhabited. As this once populous town lies in one of the most fruitful parts of the country, it is not improbable that it may be re-established by the Armenians, to whom it has lately been granted, together with twelve thousand dessiatines of land. All the adjacent parks and orchards, however, with which it was ornamented, have been almost entirely laid waste ; so that, of the very numerous mulberry-trees, only the most wretched, or such as could not be used by the carpenter, are left standing. The abundance of these trees suggested to Prince Potemkin the idea of establishing here a seminary for rearing silk-worms, and a nursery for additional plantations. With this view he engaged in the Russian service a certain Count Parma, of Milan ; who was appointed Director of the Institution for raising Silk ; and, though possessing a very imperfect knowledge of the business, he enjoyed a handsome salary.

Several Tartar buildings were also assigned to him, as well as one thousand eight hundred and fifty dessatines of the richest soil around the town, both for the planting of mulberry-trees, and for settling the colonists devoted to the culture of silk. But the disturbances during the late war prevented the execution of this project on a large scale. The Director obtained his pay regularly till the year 1796; and all his efforts have been productive only of from six to ten pounds of silk annually, and in the last year of twenty pounds weight; beside which, he has laid out a nursery of several thousand mulberry-trees. In consequence of such failure, the attempt has been totally relinquished. Should the Crimea, at some future period, be so fortunate as to receive a few thousand Georgian and Armenian colonists, who might prosper and live here more peaceably than on the steppes near the Kuma and Terek, there is no doubt but many hundred pounds of silk could, from this neighbourhood, be brought to commercial markets, without requiring a superintendant, or occasioning expences to Government. Farther, a variety of other useful articles might, with advantage, be cultivated by these industrious people, who are habitually inclined to similar pursuits. It is, however, to be regretted, that all the fine, warm dales of the southern coast are inhabited partly by useless, inactive, and, in certain cases, dangerous Tartars, who understand the art of destroying better than that of rearing; and, on the other hand, that the crown-lands have been granted to such proprietors, as possess neither the ability nor the good-will of establishing colonies for the public good, in situations thus favoured by nature.

All the environs of the city of Eski-Krym, as well as the eminence, generally called Kufghunu-Burun, or the Crow's Hill, which is situated between the town and mount Agermish, in every direction exhibit traces of a former, very considerable population. It is farther remarkable, that there are numerous wells and springs on a height, which on both sides is intersected by a valley. Many traces of aqueducts are likewise discoverable under ground; but they are mostly in a ruinous state. Shahinghirei, the last sovereign Khan of Crim-Tartary, caused unproductive mines to be opened in mount Agermish, which presents the deep cavern, or abyss, mentioned by Hablitzl, and known by the name of Ingistan-Kuyou. Here, as in several other places, the sulphureous pyrites proved to be a false guide. As the hill is much exposed, and may be descried at a great distance, it is by no means improbable, that such eminence is the Cimmerian mountain of STRABO.

On departing from Eski-Krym, we descended the last eminence formed by the calcareous promontory, and reached plain abounding with herbs. At the distance of seven versts a from our last stage, we arrived at the country-seat of the hospitable and gallant General de Schütz, in the vicinity of the village of Karagos. Immediately on leaving the town, there appears an ancient wall, the proper direction and extent of which I could not ascertain. In this neighbourhood, we also discovered the remains of a sepulchral monument, constructed of free-stone, and embellished with a Gothic arch. According to a Tartar inscription, bearing the year 868 of the hegira, or 1454 of the Christian æra, it has been erected in memory of a certain Hiaffedin-Sultan, the son of Khan Kilai-Temir.

The

The economical plans, carried into effect by the possessor of Karagos, deserve great praise; because they are the first of the kind, since the occupation of Crim-Tartary by the Russians. His estate lies in a fertile, rising plain, on the banks of the rivulet Serenfu; the source of which is in the vicinity of Eski-Krym. Contiguous to the manor-house, a vineyard has been planted with three thousand vine-stocks; and there is also an apiary, which frequently contains three hundred bee-hives*. Beside the kitchen and flower gardens, we observed, on the opposite side of the brook, extensive old orchards, on a rising ground occupying several square versts. On the same eminence are situated a Tartar house of prayer; a village inhabited by Nagays; who have become Russian vassals; and, at some distance, another village of domesticated Tartars. The breeding of numerous cattle is here successfully attended to; but, as the country is not sufficiently provided with wood, both the Tartars and Nagays (like those living on the whole steppe) are obliged to employ a species of turf, composed of dung and other ingredients, as a substitute for fuel.

From the plain of Karagos, the road leading to Kaffa, which is seventeen versts distant, again approaches the extreme calcareous promontories that incline towards the western part of the bay, and thus conceal the loftier mountains. Several hollows, formed by torrents, though at present in a dry state, extend down the heights; being provided with a few well-

* The author denominates them *bee-stocks*; because no hives are used either in the Crimea or in the North of Europe; where the swarms of bees are generally introduced into an excavated block or trunk of a tree, having two compartments; the upper one for the deposition of honey, while the lower part is mostly stored with empty honey-combs. — *Transl.*

arched stone-bridges, which are still in good condition. After travelling over uniformly level grounds, we reached the bay of Kaffa, which has a sandy bottom, and is upwards of twenty-eight versts in breadth. On proceeding two versts farther, along the shore of the latter, we arrived at Kaffa, a town that is situated on the western angle of the bay; and which, notwithstanding its former prosperity and population, has lately experienced such adverse fortune as to exhibit little more than a heap of ruins.

After the seizure of the Crimea, this city received its ancient name of Theodosia; and, at present, its later Tartar denomination is again prevalent, though it was also called by the Tartars Kutshuk-Stambul, or Little Constantinople. Being erected in an excellent situation very favourable to commerce, it was the principal place in the Crimea, possessed by the Genoese. Even under the Tartar government, it was a populous town, flourishing by its trade, and inhabited by many Greek and Armenian families. But, during the late Turkish war, when the Russians made themselves masters of Kaffa, and especially after the occupation of the whole peninsula, this city was almost depopulated, in consequence of the numerous emigrations; so that, with the exception of a few small quarters, it now represents a prodigious heap of ruins that cannot fail to excite commiseration. The strong and lofty walls of the town, erected of free-stone by the Genoese, stand almost entire; and are strengthened, especially on the sea-side, by numerous fortified towers, at the distance of twenty, forty, and sixty fathoms from each other. These towers are remarkably well built, being open at the lower interior part,
which

which is enclosed with a large Gothic arch ; and having, about the middle of their elevation (where perhaps galleries or balconies had been contrived) four embrasures for cannon, several of which were probably also placed on the platform. The wall encloses an oblong square along the bay, nearly two versts in extent, and proceeds, on its western and southern sides, over a part of the adjacent calcareous heights, that form the lofty western promontory, terminating the eminences. On this cape is raised the smaller fort or citadel, together with a consular house still existing. Over the entrance to the latter, there appears to have been an inscription, of which the name of JUSTINIANI is still preserved. The fortification, last alluded to, presents twelve elevated towers with battlements : beneath them are four gates, one of which is particularly distinguished ; the whole being confined within remarkably strong walls, and a dry fosse lined with masonry-work. Another small fort is attached to the north-western extremity of the town : it consists of a castle surmounted with towers for the discharge of artillery, and is farther strengthened by walls and four strong bastions, as well as by a ditch similar to the former. There are two suburbs, though at present almost in ruins, situated on the southern and eastern sides of the wall. Among the few inhabited, half-ruined houses within the precincts of the city, and between the heaps of rubbish spread in every direction, we were peculiarly struck with the large and capital metshet, called Beeyouk-Dsham, and standing almost in the centre of the place. It is a noble specimen of simple architecture, and is kept in a state of complete repair. This edifice is seventeen fathoms in length, and fourteen in breadth : its large dome



measures upwards of nine fathoms in diameter, and is on three sides embellished with eleven smaller cupolas. When I caused the prospect of this town to be drawn from the side next the bay, as represented in the fourteenth plate, there were two *minarets*, or octagonal turrets, sixteen fathoms high, and furnished with serpentine stair-cases leading to the top; though both structures have since been demolished. A large Turkish bath, consisting of two principal vaults, stands in the vicinity of such mosque: the latter, however, is now converted into a magazine; while the former is employed as the chief guard-house. The streets of Kaffa have been planned with tolerable regularity; and, beside the public edifices already specified, this town has three churches; namely, one of good workmanship, belonging to the Greeks; another possessed by the Armenians, and a third by the Roman Catholics; farther, a *soi-disant* palace allotted to the Archbishop of the Crimea; with a few good shops, and khans, or mercantile halls. But the unfinished palace, commenced by Shahinghirei Khan, lies beyond the town on the bay-shore, as well as the mint built by the same prince; but the latter establishment was speedily relinquished; and the buildings, appropriated to it, have lately been adapted to serve the purpose of barracks. The aqueducts, by which the whole town was formerly well supplied with water, were derived from the rising eastern height, at the distance of five hundred and fifty feet.

It is much to be regretted, that the fisheries in the bay of Theodosia are almost totally neglected; as it especially abounds with fish of passage, that frequent the Black Sea in numerous shoals. Beds of small oysters with thin, coloured shells, are

uncommonly plentiful towards the mountainous corner of the land, and as far as Koos. On the other hand, there are muscles of a large sort, frequently containing a number of diminutive pearls, that possess but an indifferent lustre, and seldom exceed the size of hemp-seed. Their flesh, however, is of an excellent flavour, and I have often counted in one of these shell-fish more than thirty of such pearls. The Jacob's muscle is, in these waters, likewise found in great abundance.

On the sandy strand, we met with the plants generally thriving near the sea-shore; namely, the *Crambe maritima*, *Bunias Cakile*, *Salsola Tragos*, *Elymus*, and other marine vegetables. The most remarkable of these, however, was the *Messerschmidia*; as I had not hitherto met with it in the Crimea, and as it probably occurs in no other parts situated so far to the West.

The post-road from Kaffa to Kertsh conducted us over a considerable tract, along the sandy shore of the bay, and over a similar plain extending into the country, till we reached the next stage, or the village of Shibani, lying at the distance of twenty-two versts. In these regions I noticed the *Astragalus tenuifolius* and *Onobrychis* growing to the same size as in other countries; whereas, in the calcareous parts of Crim-Tartary, these plants are of a diminutive and creeping figure. Nor has the *Cheiranthus montanus*, which flourishes here, been found in any other quarter of the peninsula.—At length, we lost sight of the bay.—On the eastern side of the village last mentioned, we observed an elevated line, mingled with numerous scattered ruins of stone, and exhibiting small eminences or hillocks composed of rubbish, which lie at moderate distances

from each other. This line is said to extend northward as far as the sea of Azof, and here appears, at the highest part of its surface, to proceed directly East and West, for several versts ; after which it apparently turns more to the South, towards the bay of Theodosia. According to the information I have been able to collect, these mural vestiges are most evident between Porpatsh and Korsetsh : they continue their course from Shibán to the South-west, towards the lake and village of Türeké ; then towards Sarigoll and Adshikall, where the wall has been joined to the mountains rising in the vicinity of Kaffa. Fragments of stone are perceivable both on the straight line and on the surrounding prominences. In one place near Shibán, a projecting border of rocky square masses has been connected with the wall. The hillocks, here alluded to, are from sixty to eighty paces in diameter ; and the intermediate distance is generally not less than one hundred and eighty paces. On the western side, there are a few indistinct traces of ditches, together with many pits, that have probably supplied the clay used in building the wall. It scarcely admits of doubt, that these vestiges indicate the very ancient rampart, erected by ASANDER across the peninsula, for its defence ; and of which STRABO* gives an account : the distance between the towers, however, not corresponding with that before

* “ *Nomades bello magis, quam latrociniiis, sunt dediti ; bella gerunt propter tributa : agros enim suos colendos iis, quibus lubet, concedunt ; contenti, pro locatione, certo stipendio, eoque non ad abundantiam, sed ad necessarios quotidianæ vitæ usus temperato ; et non persolventibus bellum inferunt — Quod autem stipendia non solvunt alteri, id faciunt viribus suis confisi, quia aut propulsare adventantes, aut etiam aditu se posse arcere sentiunt ; id quod Asandrum fecisse scribit Hyppicrates, qui isthmum peninsulæ ad Mæotidem CCCLX stadiorum muro ducto munierit, denis turribus in singula stadia constitutis.*” — Strabo, Lib. VII.

observed between the heaps of ruins, the historian has perhaps stated it to have been smaller than it really was, when he computes the intervening space at about ten fathoms of modern measurement.

Having advanced in my journey to the vicinity of Arabat, I was anxious to visit the fort of that name, and the isthmus thence proceeding into the sea. The distance from Shibani to this place is only twelve versts; travelling over arable lands, plains, and hollows: some of the latter have a soil impregnated with salt, and are almost covered with the *Centaurea glastifolia*.

The small fort of Arabat lies immediately at the commencement of the isthmus, between the Sivash and the sea of Azof: it defends, by this neck of land, the entrance into the Crimean Peninsula. The fortifications represent a polygon, very durably faced with hewn lime-stone; having seven regular bastions, with a dry fosse, also lined with stone. Towards the Sivash, there is a long intrenchment, and a shorter one in front of the sea, with contiguous batteries; the whole being constructed of free-stone. Beside a metshet with its octagonal tower, both of which are well built of stone, and a wretched house for the Governor, the fort presents only a few huts, partly above ground, and partly under the wall, for the accommodation of soldiers.—The isthmus is here several hundred fathoms broad; and the land at first uniformly consists of testaceous sand, in which some thinly scattered vegetables thrive with luxuriance. On advancing farther, the surface of the soil exhibits common sand, which is more or less consolidated, and of a saline nature, so as to produce the *Statice ferulacea*, and a few *Polycnema*.

The

The eastern shore displays numerous specimens of *Pectinites*, *Tellinæ*, and other shells. Among the plants growing in this region, the following are the principal; namely, the *Elymus* and *Eryngium maritimum*, *Daucus muricatus*, *Crambe orientalis* and *maritima*, *Gallium prostratum*, *Asperula cynanchica*, *Astragalus Onobrychis* and *virgatus*, *Achillea tomentosa*, *Bunias Cakile*, *Centaurea paniculata*, *Coronilla varia*, *Medicago falcata*, *Thymus Zygis*, *Cheiranthus erysimoides*, *Potentilla recta*, *Teucrium Polium*, *Atriplex portulacoides*, *Statice Limonium*, *Artemisia Austriaca*, *Plantago media* and *lanceolata*. We also frequently met with the *Coluber Berus*, and the white downy Cock-chaffer, that appears in June. — The length of the isthmus, as far as the ferry leading to Jenits-khe, is computed to be one hundred and ten versts. This narrow track of land is much frequented by carriers from Little Russia: they import provisions into the Crimea; and in return take other commodities, especially fish, of which large quantities are caught in the sea of Azof.

On leaving Arabat, I first pursued a collateral road, along the sea last mentioned, as far as the village of Akmonai: in its vicinity are some old wells, lined with masonry-work, within a deep glen that extends towards the sea; and on the surface of which appears the calcareous stratum. Immediately behind the village, a few versts from Arabat, there is a quarry, whence the stones were obtained for erecting the fort. This fossil is of a soft texture, composed chiefly of testaceous fragments; the bulky layers of which lie about a fathom above the level of the sea. Incumbent on this bed of lime-stone is a flat eminence; from the steep back of which we passed by the Tartar village of Oggus-tebé, or the Bullock's Hill, a name derived from
such

such elevation. All the Tartars, who inhabit the Crimean plains, and the whole peninsula of Kertsh, are obliged to employ an artificial turf prepared with dung, as a substitute for fuel; and, as the ashes of this combustible are accumulated in heaps contiguous to their dwellings, I am inclined to think that large quantities of excellent nitre might thence be extracted. There are no orchards to be seen throughout the peninsula of the Bosphorus. The arable land here consists of an uniformly black mould, and is remarkably fertile. A few low grounds, impregnated with salt, extend to some distance from the village. In other respects, the country was level, till we had passed the successive villages of Aleby and Keeyat, as well as the stage of Wogibeleé, Aibeleé, or, as it is sometimes called, Ogibel, which is embellished with a metshet erected of stone; and where we again reached the post-road, after a journey of fourteen versts from Shiban. But, in this neighbourhood, flat ridges begin to rise across the peninsula, in a transverse direction; being perceptibly steeper on their western side, and alternately intersected with broad plains and hollow grounds, which proceed to both seas. The black soil produces numerous plants, such as likewise grow on the steppes. The common lizard, *Lacerta agilis*, is here, as well as in the plains around the Karassu, of a very large size; being in general of a grass-green colour, sometimes spotted, or even of a brownish hue, and exceedingly numerous.

Our next stage was Argin, a depopulated Tartar village, fourteen miles distant from Arabat. It presents, however, a respectable metshet, built of free-stone, wherein are cut many passages from the Koran; several tomb-stones, some of which

are unusually large, being placed around this house of prayer. All the minerals here exhibit conglomerations of testaceous sand and broken shells; and this horizontal bed of marine lime probably spreads over the whole peninsula of Kertsh; though it is discernible only in a few places above the vegetable soil.

A remarkable hillock, called Dsho-tübé, or Dshal-tübé, lies at the distance of about five versts and a half to the south of the post-road, and near a village of the same name. It is situated at the side of the road leading from the village of Koshai (between Shiban and Aibelé) to Kulassin; passing the borders of the lake also called Koshai, over an uneven country, about ten versts to the north of the Black Sea, and about eight versts from the village of Dürmeen, at the commencement of a deep trench formed by torrents of rain-water; and which proceeds towards the rivulet Kirgis, and the salt lake Katshik. This eminence has arisen from one of those surprising *eruptions of mud*, occurring both in the peninsula of the Bosphorus, and in the Isle of Taman; several of which I shall presently mention, and endeavour to explain their origin, together with their nature. The Tartars well remember the bursting forth of fire, that preceded the formation of this hillock, and of the muddy source it exhibits: they consider it as the residence of evil spirits, which cannot be approached without imminent danger. On its top is an open crater, whence the mud, or mire; that is not yet covered with verdure, has issued in an easterly direction towards the village, and filled part of the trench above mentioned to upwards of half a verst in length. In the winter, and during wet seasons, it still appears in a fluid state; but, in summer, the surface of the gulf is sufficiently dry to
admit

admit a person to walk over it. The substance itself consists of a grey, tolerably tenacious clay, mixed with fragments of a stony fossil; and pieces of pyrites have also been discovered among the mingled matters. In the vicinity of this eruption, there occur a few springs productive of rock-oil.

Four versts before we reached the village of Aggös, or Akkos, which is twenty-two versts distant from the stage of Argin, and consequently thirty versts from the town of Kertsch, we could distinctly trace the strong boundary drawn by a rampart and ditch over the elevated plain, which has an undulated appearance, and is covered with rich verdure. Such line of demarcation has, in former ages, unquestionably served to separate the empire of the Bosphorus from the possessions of the Chersonites: it is in a tolerable state of preservation; being overspread with tall and luxuriant plants, among which the *Centaurea Tatarica* begins to predominate; and we also noticed numbers of the *Myrmeleon libelluloides* flying about in the month of June, even during a tempest. The basis of this prodigious rampart measures nearly forty arshines, or about thirty-one English yards, in diameter; and the ditch, on its western side, is almost twenty arshines, or half the breadth of the former. Both may be seen from the road, which intersects them, ascending the heights in a straight western direction; though, at a short distance from the road, on the right, there is towards the west a considerable hillock accumulated on the rampart; at the side of which appears a cleft, or opening, with many large stones scattered around it; thus rendering it probable, that a gate, or tower, formerly stood in such place. The line, before described, now turns, between North-west
and

and North-north-west, directly towards the Sea of Azof. In its course to the South, however, it does not reach the Black Sea, but terminates at the northern extremity of the salt lake Itar-Altshik; which is upwards of eight versts in length. CONSTANTINE PORPHYROGENETUS apparently relates the occasion on which this strong frontier was raised between the Greeks of the Bosphorus, and the Cherfonites, who were, in those remote ages, involved in continual wars *. In one of these contests, which broke out during the reign of the Emperor Constantine, the crowned Protevontes conquered Sauromates, King of the empire of the Bosphorus, in the vicinity of Capha; where the boundary was fixed in consequence of such victory. But as, a few years after, another Sauromates, sovereign of the Bosphorus, violated this treaty respecting the territorial limits, and was subsequently overcome in a duel by Protevontes Stephanophorus, the Pharnaces of the Cherfonites, the inhabitants of the Bosphorus were compelled to withdraw their frontiers as far as *Cybernitus*, that is, only forty *milliaria* distant from the city of Bosphorus. I accidentally obtained at Kertsh a very scarce copper medal, of the size of half a guinea, but of very indifferent coinage; which seems to have been struck on this important occasion. On one side it represents a crowned head, with the following inscription:

BACHÆWC CAÿPOMATEC.

* STRABO, perhaps, likewise speaks of this rampart, when he says: "*Cimmericum urbs fuit quondam in peninsula jacens, isthmum fossâ et aggere claudens. Fuit quondam tempore magna Cimmericorum in Bosphoro potentia, qui et Cimmericus ab iis dictus fuit. Hi sunt, qui regiones Continentis a dextra Ponti sitas, usque ad Ioniam incurfionibus vexaverunt. Atque hos quidem Scythæ istis e locis expulere; Scythas Græci, qui Panticapæum et alias in Bosphoro urbes condiderunt.*"

On the reverse of the coin is represented a warrior on horseback, stretching out his right arm; and, detached from the horse's breast, there appears a small bearded head, severed from a human body.

On leaving Akgös, or Akkos, we first observed an elevated plain of immense extent; after which the country towards Kertsh (being twenty-six versts distant) becomes more hilly, and exhibits a very singular appearance, on account of the numerous prominences formed on the heights; such as I do not recollect ever to have seen in any of my former travels. Between the heights are vallies, spreading in an easterly direction towards the narrow channel of the sea; and, after crossing one of such dales, we arrived at the town and fortrefs, which I shall presently describe.

Kertsh, formerly called Bosphor, is situated in that part of the Bosphorus, which expands towards the Black Sea, on a somewhat projecting neck of land, having a boggy and fetid shore, but forming a safe bay with excellent anchorage, from eleven to fifteen fathoms in depth. The fort is built of freestone, on the old plan, tolerably high, with angles around it; being on the south side strengthened with a horn-work contrived by the Russians, and which is also lined with stones, in order to command the entrance into the harbour. Over the gate leading to the citadel, we at one side noticed a marble figure representing the lion of the Venetian republic; and, in the wall of an ancient building, now employed as a magazine, we observed an old white marble cornice of excellent workmanship. Beside a very antique Greek church, there formerly was, within the fortrefs, a variety of old decayed buildings,

buildings, that have lately been demolished, with the view of employing the materials for erecting barracks. On digging up the foundations, many old tombs and other monuments of antiquity were discovered; but they have, for the most part, been secreted by the labouring soldiers; or the inscription-stones have again been used in the construction of new edifices. The Greek church, before mentioned, is a Gothic vaulted building in the form of a cross, resting with its dome on four columns of grey marble; and its arched ceiling is about five fathoms high. On the plain surrounded with heights, towards the north and west sides of the fort, a small number of houses are irregularly disposed, and present a kind of suburb, without a market-place. The inhabitants of Kertsh are not numerous; amounting only to fifty-seven merchants, and one hundred and nineteen artificers of the male sex; and the latter of whom are mostly Greeks, that maintain their families by the fishery.

The battery of Pavloffkoi, erected on the shore at the distance of a few versts to the south of the fort, forms, together with another denominated Alexandroffkoi, the proper key to the Bosphorus and the sea of Azof; because the strait is here naturally contracted, not only by the Youshnaya-koffa, or southern point of land proceeding from the shore, as well as by the small isles and shoals situated in a north-western line with the former, but likewise in a still greater degree by the adjacent sand-banks; so that the channel is less than four fathoms in breadth, and the roads are from twenty-two to twenty-six fathoms deep: hence the vessels, navigating such strait, are obliged to pass close under the cannon mounted

on these batteries. Throughout the summer, a frigate is stationed here for guarding the Bosphorus; but, on the approach of winter, it returns to Akhtiar, as the streight is usually covered with ice. At a small distance from this guard-ship, the quarantine of Kertsh has been established on shore; though it has hitherto afforded but very few conveniences for mariners; there being only some indifferent houses, and a vineyard originally planted by slaves imported from Georgia.

It has frequently been proposed to appoint at Kertsh a general quarantine for all vessels frequenting the sea of Azof: by this regulation, the Russian empire would derive many advantages. The first and most essential would certainly be that of insuring, to the interior provinces, perfect safety from epidemic infection, which can with difficulty be prevented on the very extensive, and on every side accessible, coasts of the sea last mentioned: in the next place, the expences of quarantine and centinels, which must necessarily be supported at Taganrog and other places, might be easily saved; lastly, such measure would greatly facilitate both the export and the coasting trade, which are at present extremely defective. Thus the town of Kertsh would speedily receive an additional number of inhabitants; become a kind of emporium for Russian commodities; and ships of considerable burthen (which cannot pass through the Bosphorus, on account of its waters being only from fifteen to sixteen feet deep) could here be laden at a reduced freight, as they might in one summer perform two voyages. Farther, the barges navigating the river Don, and supplying the port of Taganrog with grain, iron, hemp, sail-cloth, and masts, would doubtless give the preference to that
of

of Kertsh ; because the latter is incomparably more convenient for the loading of vessels. Notwithstanding all these evident advantages, that would greatly contribute to the prosperity of the Crimea, the plan before stated has always been opposed by the wealthy merchants of Taganrog, who foresaw in it the decline of their trade, and spared no pains to prevent its execution. On the other hand, the establishment of a general quarantine at Kertsh would be attended with little or no expence to Government ; because the situation of the ancient fort cannot be better adapted to the purpose ; and, by walling up one of its gates, it would present only one entrance. There are likewise a sufficient number of barracks in this fortified place ; and the ships, which at Taganrog are obliged to lie on muddy ground, so that they can be laden only with great difficulty, could at Kertsh proceed close to the shore of the fortrefs, which is enclosed with a proper stone-wall.

The environs of Kertsh are more mountainous than the commencement of the peninsula of the Bosphorus. The ridges, which project on its surface not unlike girdles, become progressively more elevated ; and the last three of such eminences deserve particular notice. They are situated in the form of successive crescents, the extremities of which rise towards the Bosphorus, so as to terminate in rocky promontories at the coast ; though the intermediate space consists of vallies exposed on the sea-side. The *extreme* semi-circle commences near cape Kara-burun, and is apparently connected with the rocky point of land, situated to the north of Yeni-kalé. Between these and the most projecting corner of the Bosphorus, termed Takilmuis, there appears the salt lake known
by

by the name of Shungulek, which is separated from the sea only by a tract of sandy shore. The *second* semi-circle begins in the vicinity of the Kamysh-burun, which is intersected with small lakes; and it also takes a northerly direction about Yenikalé, where it at length combines with the former. On the southern side, between this and the preceding hilly crescent, we met with a lake called Tshurabash. Lastly, the *third*, or innermost of such mountainous girdles, arises on the left of the fortrefs, together with the Ak-burun; describes around the plain of Pantikapaeum, between Kertsh and Yenikalé, a semi-circle (the direction of which corresponds with that of the bay); and, with its opposite extremity, forms those heights near the shore, on which Yenikalé itself is situated. The quarantine, above alluded to, lies at a short distance from the sea, between the last and the second of those ridges. There are two inconsiderable rocky promontories betwixt Kertsh and Yenikalé: they appear to be parts of a fourth circular eminence, the progressive curve of which disappears with the level country. The surface of all these ridges exhibits lime-stone, which is remarkably soft in the interior circle, being throughout composed of testaceous fragments; yet, notwithstanding its porosity, it is of a harder consistence in the two other girdles, where it appears in a manner corroded, and is generally filled with the *Eschara lapidosa*. On account of the numerous prominences on their summits, and which at a distance resemble prodigious sepulchral hillocks, the ridges present a very uncommon appearance; though their whole elevation, according to a mensuration taken on the spot, does not exceed three hundred feet above the level of the sea. The interior of such ridges,

ridges, or that situated next to Kertsh, is particularly conspicuous; as we counted, on its top, about sixty of these hillocks of different sizes. On the succeeding semi-circle, though fewer in number, they are larger and more rocky; being arranged nearly in two rows: on the third, however, they are less considerable. Many of the prominences, just mentioned, exhibit layers of lime-stone, frequently two arches in thickness; being decayed in their circumference, apparently fallen down, and placed on each other in detached masses. Of a similar nature and constitution is the reputed *Altyn-obo**, four versts from Kertsh, near the post-road, and which is supposed to contain the tomb of MITHRIDATES; though such monument ought not to be searched for in the Crimea. Contiguous to the hill, last alluded to, there terminates a kind of rampart, which appears to have been drawn across a part of the angle formed by this peninsula; and a similar mound is also discernible near Melek, about four versts from Kertsh. The level vallies occurring between the eminences, as well as the plain situated between Kertsh and Yenikalé, are apparently sunken. And, though I am not immediately disposed to attribute this external form of the country to subterraneous effects, that may probably have occasioned it, yet many indications prove beyond all doubt, that both the peninsula of the Bosphorus and the Isle of Taman contain layers of kindled inflammable matter, which have not only produced the abyss of Dshaltübé above mentioned, but also

* This hill is composed of large masses of waxca; and a tradition prevails among the Tartars, according to which it contains a treasure, that is guarded by a virgin who here spends her nights in lamentations.

caused many other ebullitions of mud, in the vicinity of the Bosphorus. Beside those to be mentioned in our farther progress towards Yenikalé, we met with similar eruptions, that were still in an active state, on the height contiguous to a deep glen, which extends towards Kertsh; after we had advanced eight versts from this place in a direct northern line towards the desolated village of Dshiolow-Tarkhan, and at the distance of two versts and a half from the shore of the sea of Azof. In the same country are springs, having inspissated rock-oil on their surface. They afford an incontestible proof of subterraneous sublimation.

The ancient city of Pantikapæum, which, according to Seylax, was situated at the distance of twenty stadia from Carionda, or about four versts from the entrance of the Mæotic Sea, certainly stood nearer towards Kertsh; namely, in the plain intervening between the last-mentioned fort and that of Yenikalé. This part of the level tract, on which large heaps of ruins are in every direction discoverable, was formerly inhabited, but is now entirely covered with the *Harmala*; a plant that delights in a nitrous soil. Distinct vestiges of the foundation of a tower, measuring twelve arshines in diameter, and having originally been surrounded with a ditch, are still perceptible near the sea-coast. On descending farther into the valley, we observed many other traces of buildings; and the whole surface of the ancient town, being razed to the ground, is distinguished by a groupe of more than fifty large hillocks scattered to a considerable extent, and containing sepulchral urns. One of these eminences has been partly demolished by the encroachments of the sea, so as to exhibit the fragments







ΣΤΡΑΤΩΝ ΠΡΟΤΟΜΑΧ
ΧΡΗΣΤΕ ΧΑΙΡΕ

Fig 3.



ΗΖΟΥΑΠΟΛΛΩΝ
ΔΟΥΔΙΕΠΑΤΑΠΩ
ΣΙΝ ΧΑΙΡΝ



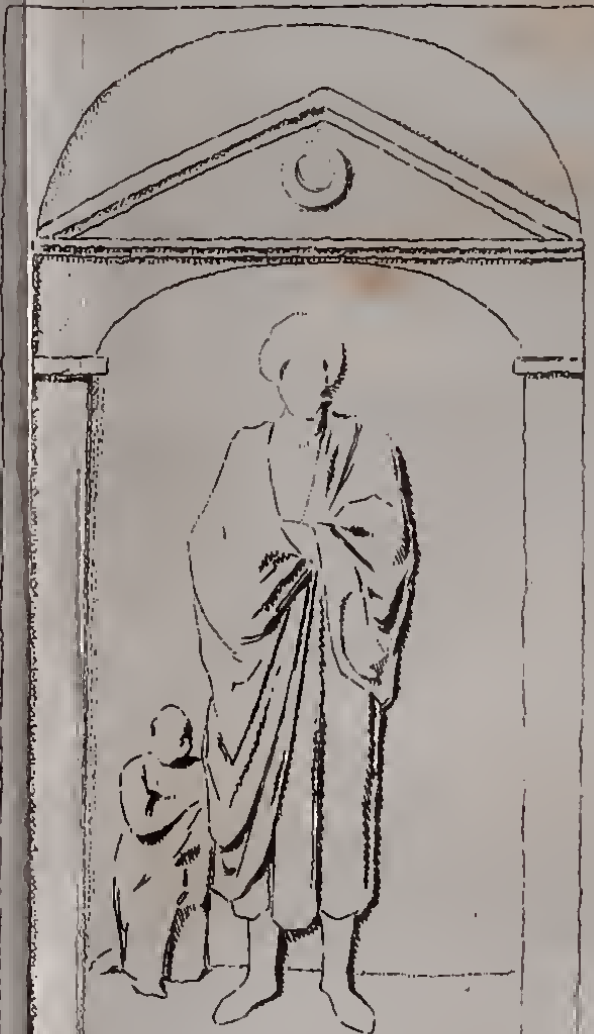
ΙΩΑΝΝΗΤΗΡ
ΜΕΛΟΥΚΑΙΔΕΦΙ
ΔΗ ΣΤΡΑΤΗΧΑΙΡΕ

Fig 4.



ΑΓΑΘΗ ΤΥΧΗ

Fig 2.



ΕΥΧΑΡΙΣΤΙΑΣ
ΚΑΙ ΑΓΑΠΗΣ
ΑΝΤΙΣΤΑΣΙΣ

Fig 1.

of such earthen vessels. At a more northern, though small and rocky corner of the land, we also noticed pieces of urns projecting out of the shore; and, on a similar promontory which terminates the bay of Kertsh, we observed the ruins of a fort, that had been erected of stone. In the environs of the ancient city, there are frequently found specimens of marble which have been employed in architecture, as well as stones wrought in *bas-relief*, with inscriptions, mostly of a rude workmanship. Some of these monuments are fixed to the walls of the old Greek church at Kertsh; others I had an opportunity of inspecting in the house inhabited by the commanding General. Among the former was the stone represented in the seventeenth plate, Fig. 1.; and it is not only remarkable for its high antiquity, which relates to the times of Mithridates and Partholomæus, the last King of the Bosphorus; but also on account of two footsteps on its upper side, completely resembling the impressions made by the shoes of a man; while they bear not the least mark of having been produced by the chissel. The stone itself consists of grey marble; is about two arshines, or four feet eight inches, long; one arshine broad; and a span in thickness: it covers a front wall of the entrance into the church. — At a short distance from this stone, my attention was arrested by another, delineated in the eighteenth plate, beside those preserved in various parts of the church wall; but which deserve no particular enumeration. Lastly in the house of the clergyman residing at Kertsh, I took notice of a marble ornament, with a *bas-relief*, that represents a *Triclinium*, and has the following inscription: ΑΓΑΘΗ ΤΥΧΗ, Fig. 2. This monument, I understood, has been brought hither from an

ancient fountain lined with stone, being situated to the west of the post-road leading to Kertsh. We met, however, with another excellent fountain near the present town of Kertsh; and it is evident, from the inscription attached to such erection, that the whole is of modern Turkish workmanship.

Yenikalé lies at the distance of eleven versts from Kertsh, on the angular southern extremity of the peninsula which contributes to form the Bosphorus Proper, or Channel of the sea of Azof. The fortress is situated on an eminence abruptly declining towards the shore, in the form of an amphitheatre; and represents a very irregular polygon, consisting throughout of stone, and constructed by the Turks: at the north-western corner, a very high bastion is raised against the adjacent height; and a smaller one on the south-eastern angle fronting the sea, where the quarantine is likewise established: the other connected works are angles of defence, without any order. The town is built along the sea, to the south-west of the citadel; having but few considerable houses, and one row of booths. Its male inhabitants, or house-keepers, do not exceed one hundred and ninety in number; fifty-three of whom are dealers or tradesmen, and one hundred and thirty-seven are citizens, mostly of Greek families. There are scarcely any other buildings worthy of notice within the fortress, except the church, that formerly was a metshet; the Governor's house; the edifice purposely erected for an apothecary's shop, or warehouse, provided with good cellars, but the whole of which now stands empty; and several barracks. Beneath the small bastion, is a cistern capable of holding water sufficient to supply the garrison for three days; and which is conducted through

through pipes. A marble sarcophagus is placed below the spout of the conduit, and serves as a reservoir: we were informed, that it has been transported hither from the isle of Taman.

Independently of the monuments of antiquity already described, I found in the Governor's residence some other fragments; which, at my request, were firmly placed in the wall, and thus preserved. Two of them are delineated in the eighteenth plate, Fig. 3 and 4. The former of these is rather more than six spans high, and two spans broad; the latter is of a similar breadth, but less than four spans in length. Near the quarantine, we farther observed on the ground the bodies of two headless lions, which have, by order of Government, also been conveyed hither from the isle of Taman, and are relics of the former Venetian sovereignty over this place. Lastly, in their vicinity lay three beautiful columns of grey marble, longitudinally veined in a parallel manner, together with two capitals coarsely hewn in *bas-relief*.

The valley, extending from the northern part of the town to the sea, was in former times wholly covered with orchards; of which, however, a few only remain at present. On leaving the fortress, we proceeded in a north-easterly direction along the shore of the Bosphorus; and, after passing the scattered orchards, we reached, at the distance of little more than a verst, a low saline country, which is generally inundated during wet seasons. At its northern extremity we met with some remarkable springs, issuing from the declivity of a ridge that advances towards the stratified heights bordering on the Bosphorus. Two of these wells are situated at the foot of

the eminence, several hundred yards from the sea, and only a few paces distant from each other; namely, that to the North is of a saline nature, has a very bituminous taste, and flows nearly two arshines lower than the southern spring; which contains a larger proportion of salt, but is not bituminous, and in its progress combines with others. In the rising ground, immediately above the wells, there appear several pits dug for the purpose of collecting the rock-oil, which oozes through the sides of the earthy stratum.

Beside the two situations above specified, I shall, in this place, incidentally mention all the springs productive of bituminous or rock-oil in the peninsula of the Bosphorus; whence such combustible was formerly collected by a detachment of artillery, for the use of the ordnance.

1. Near the deserted village of Iryäl, five versts from Kertsh.
2. Near the village of Seit-Alee, thirty-three versts from Kertsh.
3. In the vicinity of the village and salt-lake of Shungulek, of which I shall speak in the sequel.
4. Near Kopinee-gos, twenty-four versts from Kertsh, in the neighbourhood of the same salt-lake.
5. Near Yarmoi-Katshik.
6. Between the hillocks bordering on the saline lake Mirfir, towards the sea of Azof, and eight versts from Kertsh.
7. In a flat valley on the road to Arabat, thirty-three versts from Kertsh; where, during the whole summer, scarcely two eimers of rock-oil could be collected from nine pits opened for that purpose.

On proceeding about two versts to the north of the bituminous sources, and following the shore of the Bosphorus towards the sea of Azof, we discovered on an eminence, at the distance of one verst from the sea, various muddy eruptions, that were partly in an active and partly in a dry state, extending in a line from North-east to South-west. The largest of these is the last in a northern direction; having formed a considerable prominence, and still throwing up soft mire and bubbles, even during the summer: the others are respectively smaller; being situated in a series at eighteen, fifteen, thirteen, and twenty, paces from one another. Some of them have several apertures; and the surrounding soil yields slightly beneath the feet, not unlike that of a drained morass. The hill, exhibiting such phenomena, is separated from the superior heights, and occurs between the shores in the middle of the country.

On these eminences, near a farm-house, almost north from the city, are some good springs, the water from which is conveyed across a broad valley to Yenikalé, by means of an aqueduct resting on fourteen arches of masonry-work; and which is probably of Turkish construction. The arches are about two fathoms high, and one fathom and three quarters broad. Several of them are at present in a ruinous state.

The conveyance to the isle of Taman is by means of large boats; and, during stormy weather, is frequently attended with danger. To the Severnaya-Kossa, where the narrow northern peninsula, together with the European coast, forms the Bosphorus,

phorus, properly so called, the passage is only four versts, and is safer; but, as there is no village in that neighbourhood, in which travellers can be supplied with horses, it is usual to cross the Gulf of Taman, or *Tamanskoï-Saliv* transversely, near the point of the Severnaya-Koffa, to the city of Taman. This passage, being eighteen versts, is rendered equally dangerous by sudden gusts of wind, as well as by the numerous shoals, and the continual agitation of the eddy, even in calm weather.

The Bosphorus has generally a superficial current running outwards, when it is not impeded by the wind. In making this passage directly to the Severnaya-Koffa, during calm weather, there is a smooth line distinctly perceptible in the narrow channel beyond the ferry, where the yellowish stream of the sea of Azof meets the dark salt water of the Black Sea. The soundings are from ten to seventeen feet; and the greatest depth is along the European coast, at rather more than a verst from the land: at this part, when passing Yenikalé, it progressively increases from fourteen to seventeen, nineteen, and twenty-two feet; but, in the sea of Azof, it again diminishes to sixteen and fourteen feet. The direction of the Narrow Canal, properly so termed, is South-west and North-east, being only four versts in length. The breadth of the Bosphorus is thence enlarged by the inlet near Kertsh, and by the opposite Gulf of Taman: it now becomes contracted to about three versts, both by the Youshnaya-Koffa, which is only four versts from the Severnaya-Koffa, and by the islands which form a continuation of its point. Thus it serves as the most convenient ford for cattle and horses, on account of the numerous shoals

shoals on which they can rest. In moderately cold winters, the Bosphorus, as well as a great part of the Sea of Azof, is covered with ice; which is principally occasioned by that drifted down the river Don. In severe winters, it may be passed with loaded carriages; and the spring is frequently advanced as far as the month of May, before all the ice is dissolved. From this circumstance, the account given by Strabo* is not improbable, "that the Generals of Mithridates had engaged the inhabitants of the Crimea with cavalry in the winter, on the same part of the Bosphorus on which a naval battle had been fought in the summer."

In the Bosphorus, and along the whole coast, the fishery is very profitable, particularly for the different species of sturgeon: they are caught in great quantities with nets and lines, as well as by means of a cord to which hooks are attached, so as to float on the water. Such is the principal employment of the Greeks of Kertsh, who frequently take from three to four hundred thousand ocka, or from twenty-four to thirty thousand poods of fish, in one year. The transparent red-backs, termed *Balyki*, and the bellies of these fish, called *Toshi*, cut in slices, then sprinkled with a little salt-petre, and dried in the air, are, notwithstanding their difficult digestion, in great request, particularly in Russia and in the Islands of Greece, where they are

* Lib. VII. "Gelu autem quâ sit vehementia, maxime ex iis intelligi potest, que apud fauces Mæotidis fiunt. Etenim trajectus, qui inter Phangoream et Panticapæum, plaustra ita fert, ut et viatrita et cœnum ibi sit. Et in glacie deprehensi apud Gangaman pisces effodiuntur, maxime Antacæi, Delphinos magnitudine aquantes (Hufones): ac in eodem trajectu ferunt Mithridatis legatum æstate navali prælio, hyeme equestri pugna barbaris superiorem discessisse."

eaten on fast-days. When they have been repeatedly washed and rubbed over with fresh oil, they may be kept in an open shady place for a number of years, and are then held in still greater estimation. These fish were noticed by Strabo: they are not, however, cut out of the ice during winter, as he asserts, but are taken with hooks immersed under it, through holes made for that purpose. The pressing and salting of *caviar* are likewise well understood by the Kozaks of Tchernomorski; but they are not equally expert in preparing isinglass.

During our passage over the Bosphorus to Taman, we distinctly perceived the volume of vapours, which hangs over the island in calm weather. These vapours, which resemble a thick mist, together with the many deep sources of mud and rock-oil, are indubitable proofs that there is burning, at a considerable depth under the island, a quantity of inflammable matter, which is the cause of this phenomenon, as well as of the extreme heat and humidity of the soil. A similar exhalation is more or less perceptible upon the coast of Yenikalé, where the same cause evidently prevails.

The ancient Greek name of Phanagoria, which, on the occupation of Crim-Tartary was improperly given to the old city of Taman, does not, in my opinion, belong to it; as the denomination of Tmutarakhan, by which it was known under the former government of the Russian Princes, ought to be restored to this place. Old Taman, or Tmutarakhan, has been of considerable extent, and was built among heaps of ruins: its intrenchments were about two versts and a half in circumference, from shore to shore, and one verst and a half along



the coast of the Tamanskoi-Saliv. During the last Turkish war, in 1787, a small irregular fort, consisting of two entire bastions, and several angles of defence, with narrow ditches, were erected upon an elevated part of the shore, within this space; which contained no buildings except the guard-house, and that belonging to the Governor. There are only a few good houses of the old city remaining within the large intrenchment. On the road to Temruk, several new dwellings are now building by the Kozaks of Tshernomor'ski. An indifferently constructed stone metshet, together with its minaret, is at present consecrated to the service of the Greek church. In this place are six wells, containing good water, which necessary article is rather scarce in Taman. As the city is to be ceded to the Kozaks of Tshernomor'ski; and as the inequality of the ground, which presents numerous deep holes, was unfavourable to the construction of military works, a place was selected in 1794, at the distance of two versts from the present fort, and more to the east of the bay: it lies upon the level surface of a high bank, rising from forty-seven to fifty-eight feet above the sea, and on the side of a ravine on which was erected a new regular fort, consisting of three entire and two demi-bastions contiguous to the sea, with barracks, and wells dug in the pure yellow clay. In order to complete the plan, a commodious haven is here to be formed for the reception of the flotilla belonging to the Kozaks above mentioned. Between the old and new fortresses, the latter of which has retained the name of Phanagoria, there is an intrenchment adjacent to the sea, that is reputed to have been thrown up by order of General Suvorof.

Among the ruins of Old Taman, many stones with inscriptions, and pieces of sculptured marble have been found; and others are probably concealed. Beside the intrenchment, there is, in a south-western direction, a large basin of antique workmanship, built and paved with stone; and, on the same side, are vestiges of gardens, in which the vine grows with luxuriance. Many of the inscriptions were modern Greek and Armenian epitaphs of no importance; and some had been brought from other parts of the island: the most remarkable are represented in the seventeenth plate, Fig. 2, 3, 4, and 5. On other occasions, I observed, among some remains of ancient sculpture, part of the trunk of a figure armed and dressed, apparently executed by a rude hand; some cornices; and a curious triangular capital of white marble.

The soil in the vicinity of Taman is sandy; but, on the eminences in the interior, it is combined with loam. This earth lies in some places on a level with the sea. On the shore, and in the rain-water trenches, strata of a different kind are visible on the surface. Immediately without the old intrenchment, towards the Youshnaya-Koffa, we observed a layer of iron-stone in a deep hollow near the shore, and beneath a bed of vegetable earth, loam, and blue clay, being from two to three arshines in thickness: it contains many beautiful bivalve shells, mostly of a large size, and which are filled up, and in a calcined state. Between two strata of solid iron-ore, there is a layer of light friable earth, of a greenish-brown colour, in which we noticed loose shells with their natural coat; and, though whitened by calcination, they still retain their hardness. Some of them are internally crystallized, or even

filled up, with a beautiful, deep-red, transparent, and radiated felenite: others contain only a fine, compact, argillaceous iron-ore, or ferruginous gravel. I also obtained here a *vertebra*, partly mineralized, and which probably belonged to a small species of whale. The fossil shells of this neighbourhood are never found in a recent state; and are principally of three sorts, namely:

1. A short-bellied shell, or *Mytulus*, about an inch and three quarters in length, one inch and one-third in breadth, and, when the shells are closed, not exceeding more than one additional line in the thickest part.

2. A ribbed Venus, rounded at one extremity, and indented around the other; being broad-winged towards the hinge, with very thin angles, and somewhat elevated shells. It is two inches and one-third in length, rather more than one inch and a half broad, and three quarters of an inch thick.

3. A large Venus, shaped like the heart of an ox, and slightly furrowed; having a raised border on each valve resembling a stag's hoof: from the hinge, where the basis of the shell is most prominent, towards the point, its length is three inches; its greatest breadth two and a quarter; and its thickness is nearly two inches.

To the east of Taman, the beach also furnishes many petrified shells, which likewise contain iron-ore, and are covered with a layer of reddish-brown and yellow ochre.

The isle of Taman presents an irregular surface of hills and plains. This has probably been occasioned both by the sinking of the soil, and by eruptions from the bowels of the earth, as

well as by the encroachments of the sea, and the inundations of the river Kuban. These causes have produced various changes, and are likely to be attended with many others. The different branches of the Kuban, with several large bays and inundated low tracts, completely insulate this country; which, extending westward on the Asiatic side, and having the peninsula of the Bosphorus to the East, forms the strait called Bosphorus, and encloses the *Mæotis*, or Sea of Azof. The creeks above alluded to, which may be considered as irruptions of the sea into this island, are the following, namely:

1. The bay of Taman, or Tamankoi-Saliv, appears to be an inlet of the Bosphorus, and is saline: it has no communication with the Kuban.
2. The Leeman of Temruk, by the Tartars called Ak-Tengis, or the White Sea; which, like an enclosed lake, is separated from the sea of Azof only by a narrow bank, and from the bay of Taman by a broader one: it receives from the Kuban several small streams, that appear to have formerly been navigable; disembogues itself into the sea of Azof, towards the bay of Temruk; and contains fresh water.
3. The Youshnoi-Kubankoi-Leeman, or the southern bay of the Kuban, is the largest, and is supplied by the principal channel of that river: its efflux into the Black Sea is through a narrow passage between two inconsiderable necks of land, called the Bugas, and which is so shallow that it may be forded; but towards the West it forms a distinct bay, namely,

4. The

4. The Keefiltashkoi-Leeman; the western extremity of which, being separated only by a tract overgrown with rushes, is termed the Tzokuroffkoi-Leeman. As the former creek is divided from that of Kuban only by a small isthmus, and has no communication with it, but through a narrow cut, the tradition of the Tartars is not improbable, that the Keefiltashkoi-Leeman was formerly an inland salt-lake, until the population of the country increased, when the dam, which disunited it from the bay of Kuban, was intersected; in consequence of which, the influx of fresh water from that creek has changed its saline property.

Beside these bays, the salt-marshes near Kurkee, together with some branches of the Kuban, and two more considerable arms of this river (lying beyond them and running north towards Atshuef into the sea of Azof, and having the Russian names of Tshernaya Protoka and Kafatshei-Yerik) completely insulate Taman, which anciently had no particular name: it appears, however, to have derived its present denomination from the word Tuman, in the Tartar and Russian languages signifying mist; to which it is well entitled, on account of the vapours already mentioned.—All the waters before described, as well as the whole extent of coast, the different bays, and especially the sea of Azof, are abundantly provided with fish.

From Taman, in a south-easterly course, the whole extent of country towards the Bugas, and between the Black Sea and the Keefiltashkoi-Leeman, presents many objects deserving of notice. The nearest is a small salt-lake, situated at the commencement of the Youshnaya-Koffa, and is by the Tartars called

called Kutuk-Tuffala. A larger one lies towards the neck of land, which contributes to form the Bugas, or mouth of the Kubanskoi-Leeman. It is oblong in a direction from North to South, being about four versts in circumference; and, as is generally the case with the salt-lakes of the Crimea, it is separated from the Black Sea only by a low, narrow sand-bank. During the summer, it is for the most part in a dry state; but the salt is easily dissolved by occasional showers, and is of an indifferent quality for domestic purposes. When the sea runs high, it overflows the bank, so that no salt can be deposited. This lake emits a strong odour resembling raspberries or violets; and its surface is very smooth. The salt, like that of the lakes near Kertsh, crystallizes in the form of pyramidal cubes. The *Salicornia strobilacea*, and *herbacea*, *Cakile*, *Atriplex portulacoides* and *laciniata*, *Salsola Kali*, and *Messerschmidia*, are very common in the neighbourhood.

The eminence, which encloses this lake on the land-side, is intersected by several deep hollows: its perpendicular height towards the Bugas, may be computed at seven fathoms; and it contains a marly schistus, that is apparently burnt, and emits a sound on percussion. In one of such hollows, there is a salt-spring, the black mire of which yields a strong hepatic smell. The *Lepidium crassifolium* * is abundant in this vicinity. Fragments of stone, being in a manner burnt upon their surface, are intermixed with the schistus above mentioned. At a short distance from the advanced guard, stationed at the Bugas, a somewhat deeper trench intersects the height: at its upper commencement, on the steep declivity of the western side,

* See the first volume of these Travels, p. 171, note (*).

there

there was, at the time of my visit, a small muddy spring, which discharged a grey mire resembling that of the boggy gulfs near Yenikalé; and which had formed a convex hill on the side of the trench. Two similar, though dry sources, were at that time (in the month of June) discernible on the opposite border. Beyond this place, on a small eminence, the surface of which every where presents deep fissures, and also various dry spots of mire, there are numerous holes or shallow pits, that contain a brackish water, whence a thick petroleum not unlike tar is collected. The perpendicular elevation of this height, above the level of the Leeman, may amount to six or seven fathoms. Some other bituminous springs are said to exist on a hill, which is distinguishable by the redness of its soil, towards the Youshnaya-Koffa; but I had no opportunity of inspecting them. Naptha is also produced by many other springs occurring in different parts of the isle of Taman.

The advanced post of the Bugas is computed to be about eighteen versts from Taman. Here is a remarkably narrow, low sand-bank extending to the South-east, and rather less than a verst in length: its pointed extremity is opposite to another still narrower, but six times as long; being situated on the Turkish side, and having a corresponding one within the Leeman, that terminates near a small island towards the Russian coast. Between these necks of land, on the two points of which both the Russians and Turks have a military post, the shallow passage is scarcely one hundred fathoms broad; and through this outlet the Kubanskoi-Leeman disembogues itself into the sea. On the capture of Anape, the auxiliary cavalry of the Crimea forded from one point to the other.

During

During my visit, the Turks were employed in erecting a stone fort, near the village of Dshemetri, lying on the steep eminence at the commencement of the isthmus ; on which account a vessel was there stationed : to oppose this fort, it is intended to construct a similar fortification on the Russian side ; and, with a view to maintain the communication, a redoubt is built on the road leading to the picquet, at a distance somewhat exceeding one verst from Taman.—Close to the sea-shore, and within sight, is the Turkish fortress of Anape.

On proceeding six versts beyond the picquet, towards the Keefiltash-Burun, a hilly point of land between the Keefiltashkoi and Kubanskoi Leemans, we saw on the left one of the most considerable hillocks, near which are discernible the traces and ruins of an ancient city, probably the Phanagoria of Strabo, which he places in the vicinity of Kubanskoi-Leeman, formerly called the Korokondameti. Other travellers have searched here for the city of Korokondama ; but, according to the precise and clear expressions of Strabo, it was opposite to Pantikapæum, only ten stadia, or two versts, from the Bugas ; where indubitable vestiges of it may still be discovered.—Immediately below the surface of this height, are beds of reddish calcareous stone, entirely composed of shells, from the colour of which the Tartars have named it Keefiltash-Burun, or the point of the red rock.

The middle tract of the isle of Taman, situated between the Kubanskoi and Temrukskoi-Leemans, is the highest and most hilly part of the whole country ; being also the most fertile

fertile in vegetable productions. In the centre, exactly between this Leeman and the river Kuban, the Kozaks of Nekrasov (who originated from the rebels of the Don, deserted to the Turks, and still continue under their dominion) formerly inhabited several neat villages; till, on the seizure of Taman, they were compelled to retire farther to the south of Anape. Their villages were built on several heights along the Kuban; being surrounded by the most fruitful meadows and fields; and possessing a delightful prospect over the banks of the Kuban, as far as the villages and woods of Mount Caucasus. Various antiquities and inscriptions are said to have been found in the neighbourhood. Fragments of selenite of different sizes are mixed with the clay in these hills; and, in the part formerly inhabited by the Kozaks last mentioned, there are likewise bituminous springs, from which a remarkably pure and fluid petroleum is obtained. The Kozaks usually immerse barrels with perforated bottoms in these sources, for the purpose of collecting such oil in a purer state. There are, doubtless, many other striking objects in this part of the island; but want of time, and the insecurity of the country, prevented me from making farther excursions.

I have, with more than usual attention, examined the parts bordering on the Tamanskoi Saliv, as well as those lying between it and the Temrukskoi Leeman*; and also the northern angle of the island, situated towards the Severnaya Koffa.

* The Kozaks of Tchernomorski call Temrukskoi by the name of Aftomiskoi Leeman, which is probably derived from the Tartar *Ak-tongis*.

The first object, deserving notice in this district, on quitting the city of Taman, is a small building, erected by order of the late Empress, among the sand-hills to the south of the town, near a well, for the preservation of a remarkable slab of marble with an ancient Russian inscription. This stone, for the discovery of which we are indebted to Major von Rosenberg, was found at the barracks of a battalion of chasseurs stationed at Taman, where it had been employed as one of the steps leading to the door. Vice-Admiral Puustohkin, who was dispatched thither with the squadron under his command, removed it to Nikolaef; whence it was re-conveyed by an Imperial order to the place where it was discovered; and is preserved as an historical monument in the house above mentioned. The slab consists of white marble; is between seven and eight feet in length; is polished on the lower side and edges, but rough on the upper surface, having a hole for admitting an iron cramp; and appears to have been placed above a door or gateway. On the edge of the slab, there is an inscription, which is the more remarkable, as it incontestibly proves, that Taman is the ancient Tmutarakan, where a family of portioned Russian princes formerly resided. Many doubts have prevailed on this subject; but they have been removed by Mr. E. R. Stritter, who has compared the Byzantine authors with the Russian annals. The purport of the inscription is as follows: "In the year 6576 (1065) Indict. 6. Prince Gleb measured the sea on the ice; and the distance from Tmutarakan to Kertsh was 30,054 fathoms." The occasion of this inscription is by no means evident; as the freezing of the Bosphorus, so that it may be measured on the ice, is in
itself

itself no uncommon occurrence. Privy Counsellor Alexei Muffin-Pufhkin has written an essay*, containing historical elucidations of this inscription, and of the principality of Tmutarakan, accompanied by a map explanatory of the geography of ancient Ruffia, and by a fac-simile of the inscription, which is the subject of our tenth Vignette. An incorrectness in delineating the figures, that occurred in the ninth Vignette, has induced me to give a new representation of an historical document, which appeared to me of some importance.

Soon after quitting the ancient city of Taman, by the road leading along the bay to Temruk, on the right, and opposite to the new fort, we observed a chain of eminences, or hillocks, which, at the distance of a verst and a half from the fort, and from the shore of the bay, rises to one hundred and sixty, or one hundred and seventy, feet in height. The fourth of these, called Kirk-Kol, is the most considerable, and at the same time the most remarkable, on account of the operations of nature visible on its summit. The upper part is wholly covered, apparently by an eruption, with a yellowish-grey unproductive loam, mixed with diversified fragments of stone. On ascending the most elevated surface, a strong odour of petroleum is perceptible from the first and most northern of the three muddy hillocks, which are deposited on the eminence. The first of these elevations is flat and broad, not exceeding a fathom and a half in height, but is upwards of one hundred paces in diameter: it is thinly overgrown with the *Camphorosma*, which, as well as the *Lepidium Crassifo-*

* *Istoritscheskoi Ispjedowanie o Mestopoloschenie drebnaego rossijskago Tmutarakan'skago Knäsfchenie, isdano po Wysotschaichemu Eja Imperatorowskago Welitschesfwa Powjeleniju wo Sankt Piterburge. 1794. 4to.*

lium already mentioned, is generally the first vegetable thriving on muddy eruptions. This hillock is accumulated in three sections, one above another, that probably derive their origin from volcanic discharges. In its centre we noticed two or three places with evident vestiges of muddy craters, but which are now filled up, and in a dry state. The eminence is surrounded by a circular dale, which is deepest on the south side, where it contains a stagnant pool in the form of a crescent, having no outlet; and the water of which is of a saline and urinous taste: its bank is covered with reeds, and its bottom is muddy; it never dries up in the summer. The second hillock, scarcely fifty paces from the dale that surrounds the first, is somewhat higher and less extended, having only two distinct terraces: on one side, the manner in which the mud is disgorged and inspissated around its surface is very evident, together with the spots indicating former eruptions. A deep circular hollow also surrounds this hillock, and presents a broad semi-lunar pond on the north side, with muddy banks and very turbid water, of a less urinous but more saline taste: in the middle of this lake is a clearer spot, perceptible at a distance, and which is probably the effect of a greater depth of water. Lastly, the third hillock, being less than one hundred paces from those before mentioned, and to the south of the first, is the steepest and highest, resembling the shape of a Kurgan*. It is about two fathoms and a half in height, and is chiefly composed of mud, interspersed with a great variety of small stones. The narrow trench, naturally formed around

* The Russians give the appellation of *Kurgani* to the elevated sepulchral barrows of the ancient Tartars.

it, is encompassed with loose rubble. On descending from these eminences in a southerly direction, the road passes down a curved ridge, having the low country of the Keefiltashkoi-Leeman on the one side, and on the other a deep hollow, which proceeds from the hill in a serpentine direction, till it reaches the shore. Somewhat more than half way up this ridge, on the right towards the beach, there is a mud-pit, in which we remarked two soft places: one of these is nearer to the declivity, throws up bubbles, and discharges the mud through a passage in its margin. The crater, which throws up the bubbles, is an arshine and a half, and the whole pit is about two fathoms, in diameter. The mud is thin, ash-coloured, impregnated with salt, and has a bituminous taste. — On the opposite side of the ridge, there is another pit of less extent, and in a dry state. At the distance of scarcely one hundred paces downwards, we met with a hillock, immediately behind which is a larger and more remarkable mud-pit, only two fathoms from the edge of the steep passage: its diameter is ten fathoms; its depressed border is very dry, and covered with a thin saline efflorescence. The central surface, resembling an inverted basin, is about five fathoms in diameter, and consists of a viscous mire, that is encrusted round the edge; and, when touched with the handle of a lance, fluctuates like a half-filled bladder. Bubbles of mud, as large as the crown of a hat, rise every ten or twenty seconds from the soft centre, and burst with a loud report. The mud did not overflow at the time of my visit; but, in the oblique deep gutter formed towards the adjacent valley, it was evident that, in the preceding spring, an efflux had

had taken place to the depth of a foot: the whole trench, which at length intersects the ridge, has a strong saline incrustation.— In the deep hollow appears a marly schistus, breaking in plates, and nearly resembling that of Pappenheim, with impressions of fragments of sea-weeds. From this muddy source probably arose the great volcanic eruption in the year 1782, which was accompanied with a loud explosion; and which is still remembered by the inhabitants of Taman and Yenikalé. I was much surprized at finding a nest of young horned owls, not perfectly fledged, in this hollow, which is totally destitute of wood; as these birds generally frequent the thickest forests and lofty rocks.

Lower down, in an oblique North-eastern direction towards the bay of Taman, on a grassy plain, there are two deep wells of soft water, lined with masonry-work. Beyond these, the Temruk road crosses a deep rain-water trench, over a good stone bridge. After passing several small connected eminences, near one of which a salt-spring issues from a hollow, we noticed, on the right, a hill similar to that already described, and in the middle of which are likewise three protuberances; the distance from each other is equal to about one third-part of the base; and they consist of a blackish tenacious clay. Being thickly covered with vegetables, it is probable that they were occasioned by more ancient eruptions. This hill, which has received the name of Affodagh, terminates the small chain of hillocks; and, between the Tamanskoi and Kubanskoi Leemans, there occur only some inconsiderable elevations, proceeding towards the South-east.

Along

Along the Tamankoi-Saliv, the country becomes sandy, and exhibits, particularly in one place, a fine white sand. Immediately after, a number of barrows, composed of fragments of sand mixed with marl, and combined with clay, occupy an extensive spot between the sea and the road; some of them lying near the sea-shore. At a short distance, the vestiges of a Tartar village and cemetery are observable near the sea, where probably was the site of the village of Shemardak; and, after travelling a few versts along the coast, we met with fifty or sixty barrows of different sizes, formed of heaps of sand united with clay; being partly placed in rows with an intervening ditch, and partly isolated on the elevated plain. Two of these are particularly large, and very remarkable; lying rather more than one hundred paces from each other. The falling of a stone having opened and uncovered the barrow situated to the West, led to the discovery of a vault, under which the regular eastern entrance has since been made accessible. This vault is an oblong square, and uncommonly well built; being provided with an anti-chamber on the same side. The length of the principal vault is fourteen feet nine inches, Paris measure; the breadth is nine feet three inches; and, in its centre (which is slightly elliptical), it is eight feet nine inches and four-fifths in height. The breadth of the aperture is five feet three inches towards the anti-chamber, which is eight feet eleven inches broad, and six feet and a half deep: the height of the round ceiling is only eight feet five inches; the entrance is five feet two inches wide, and was closed with two flat stones. The lower erect foundation-wall of the vault is two feet thick, and four feet four

four inches and a half high, to the ceiling; which, as well as its floor, is constructed with brick-clay: the counter-force is three inches and a half. The squares, of which the whole is formed, are white chalk-stones, containing small transparent snail-shells resembling oolites: these stones are very accurately joined, and cemented with a fine mortar, with which they are likewise thinly coated; being rather more than two feet in breadth, by two feet five inches long. The thickness of the vault scarcely exceeds ten inches; but the incumbent earth is seventeen feet in depth.—I could not obtain any satisfactory information concerning the articles found in this elegant vault; or by whom, and when, it was opened. According to some traditions, the marble sarcophagus, placed beneath the fountain at Yenikalé, is said to have been deposited here; but at present no monument could be discovered.

Near this sepulchral vault, many fragments of bellied urns are found in some of the barrows that have been dug up, and in others which have been undermined and partly broken by the sea: they are upwards of one-third of an inch in thickness, of rude workmanship, and unglazed. The series of urns appears to have been deposited on the surface of the ground, and covered up with accumulated earth. In a large hill near the strand, I distinctly perceived two rows of such urns, placed above each other, with an intervening layer of soft sea-grass wrack (*Zostera marina*) well preserved, but perfectly blanched in the ground; the whole forming a curved waving stratum. I have not met with any perfect urns: those, the fragments of which remained in their original position, were filled with a mixture of earth and charcoal. Such of the

urns as exceeded twenty-eight inches in their greatest diameter, were frequently of inferior height, and had a narrow neck ; on which account they appear not to have been destined for the reception of ashes or bones, but probably contained wine or some other liquor, and were deposited together with the ashes of the deceased. Similar urns, but of more elegant shape, and partly glazed or painted, have been found in the barrows of the Bosphoric peninsula. — In the tenth vignette, at *A.*, I have given a figure of a handsome urn, or *amphora*, of a very peculiar form, also found in that peninsula ; and at *B.* and *C.* are figures representing those of Taman, which are of the common construction. The *amphora*, fig. *A.*, beside its singular shape, is remarkable, because it has no foot (which is likewise very small in all the others), but terminates in a point ; and as it exhibits the following words distinctly impressed upon its neck, in two lines.

Ε Γ Ι Κ Α Λ Λ Ι Α
Ε Ο Π Α Μ Ο Ν Ο Σ

In the same vignette, fig. 2., in the centre, there is a section of the tomb, similar to those found in the Crimean Chersonesus : it was discovered by the workmen employed at the fortrefs of Ovidiopol, on the banks of the Leeman, or bay of the Dniestr, called by the Moldavians *Lacul Ovidului* *. I am indebted to the General of Engineers, de WOLLANT, for the delineation and

* Some persons have attempted to derive the name of this bay from Ovid the poet ; but, in the Moldavian language, *Lacul Ovidului* signifies the Lake of Sheep : it arose from the custom of washing and watering sheep in this place. Ovid, probably, was never on this side of the mouths of the Danube.

short description of this figure : I shall here insert his own words, which will alike elucidate the tomb and mode of sepulture, practised by the ancient Greeks in these regions. A head, modelled in reddish clay, in good preservation, is represented of its natural size in the eleventh vignette, Fig. 1 and 2. It was found among the bones in this tomb, and is at present deposited in the Cabinet of Antiquities of the Hermitage at St. Petersburg.

“ It appears to me,” says M. de WOLLANT, “ that the small antique bust, discovered on the bank of the Leeman of the Dniestr, called Lacul Ovidului, deserves your attention ; and I am concerned, that business of importance has hitherto prevented me from communicating to you the accidental manner in which I obtained a specimen of singular beauty, and deserving the notice of connoisseurs. This bust represents the head of a very handsome woman ; is about three inches high, being made of baked clay ; and is of exquisite workmanship. The profile is Greek, and the head-dress that of a Diana : the hair is divided on the forehead into two knots, forming together a sort of crescent. It is an object worthy of attention, and was found in one of the tombs, which we frequently met with, while erecting the fortifications on the bank of the Leeman above mentioned. The construction of these tombs is alike extraordinary and interesting : five stones of spathose schistus form a sort of case, which contains the human bones, charcoal, and generally a sort of broken lamp, together with a large pitcher, manufactured of the same material as the bust. I enclose an outline of this tomb, as well as of two large pitchers, which were deposited in the manner I have endea-

endeavoured to delineate in the sketch. I am inclined to believe, that the bust exhibits one of the domestic deities, buried with the remains of the deceased; who, from the size of the tomb and other circumstances (such as two pitchers instead of one, which the other barrows contain), appears to have been a person of distinction. Some have conjectured this bust to be that of Julia; discovering in it a perfect resemblance to some gems and medals, which represent that illustrious Roman lady. They are the more anxious to establish such supposition, as the lake, where this tomb is situated, is by the natives of the country called by a name similar to that of Ovid." — In Vign. 10., the letters *a. a.* point out the *amphoræ*, as they were found leaning against the tomb; *b.* is the clay lamp attached to it; *c.* the heap of ashes and bones within the tomb, which was excavated ten feet deep under ground, in a case-ment formed of flags; and, lastly, *d.* denotes the flat stones, with which the tomb was constructed; being about two feet and a half square, by four inches in thickness.

From the remarkable barrows above described, we travelled about a verst to the South, to some productive springs of rock-oil; crossing an extensive height, whence we could survey the Tamanskoi and the Temrukskoi-Leemans, which are separated by this eminence. Beyond the hill lies a broad glen, formed by the rain: it is in several places totally destitute of verdure, and runs in a crooked direction towards the shore of the Temrukskoi-Leeman. In this valley, which receives two adjacent short dells from the West, a brown petroleum exudes from an upper stratum of bituminous earth, incumbent on a bed of grey soft clay. In one of these dells are two, and in the other

(which has an oval bottom with a quagmire in its centre, and is twenty-eight paces long) are twenty pits, many of which are filled with salt-water; but some of them are dry, and contain only rock-oil. In all these pits, a brown petroleum collects on the surface; the bituminous earthy stratum is probably concealed beneath that part of the large valley where the barren spots occur. An extensive plain, abounding with grafs and herbs, surrounds the Temrukoi or Aftoneyskoi-Leeman: it formerly contained some Tartar villages, and is at present occupied by several farms belonging to the Kozaks. In its upper part, which is separated by an extensive bank of reeds, the water is sweet and potable; but, lower down towards Temruk, it is fetid and brackish. This Leeman produces great numbers of carp, various species of pike, and other scaly fish, as well as crabs of a bitterish taste.

On advancing farther on the Temruk road, we saw Mount Shumukai, lying directly opposite to the east end of the bay of Taman. On the upper part of this hill, are some spots covered with reeds, and a few eminences resembling barrows: the whole is intersected by different hollows, and extends some versts towards the East, with a broad ridge. On the wide base of this mountain, about twenty versts from Taman, there is a conical hill, visible at a distance; and which, from its appearance, has probably been produced by a subterraneous eruption. It is called by the Tartars, Kül-obo or Kül-tepé, signifying the Hill of Ashes. When viewed on the beach from the West, it is not unlike a small volcano, the upper cone of which is of a light-grey shade, being destitute of verdure, and probably of modern origin. It seems of less mag-

nitide on beholding it from the foot of Mount Shumukai; and the regular form of its cone is less evident, on account of a protuberance on its eastern declivity. The extent of this mountain at its base, on the wide ridge of Shumukai, may amount to about three hundred fathoms. The eastern prominence is about one hundred paces from its pointed summit; and the latter is exactly thirty fathoms in circumference, and not quite two fathoms in perpendicular height: the whole eminence may be about ten fathoms above the beach, and fifteen above the level of the Leeman. On the top of the grey upper cone (below which the hill becomes uniformly level on all sides) there was in June a small spring of soft mud, about three feet six inches in diameter, and which occasionally threw up bubbles: by inserting a pike, I found that it was very soft to the depth of a fathom, but at a greater depth it became more viscous; and, from the opening downwards, it perceptibly increased in circumference. The mud is of a perfect ash-grey colour: when fresh, it displays a blue cast; is of an uniform consistence; and, what is very remarkable, it is mixed with some roots of sedge and bulrushes, which are also occasionally found in the dry porous * mass. This phenomenon confirms the conjecture, that such mud-spring communicates with the Temrukoi-Leeman, which is in many places covered with sedge. On the whole, I am convinced, that the bursting of the sea into the kindled interstices of deep inflammable strata, by effecting the developement of various

* The peculiar state of this settled mud, and the large and small bubbles, arising from the fermentation in vitriolated layers of clay, are sufficient evidence that we ought not to consider every amygdalite or porous fossil, as being of a volcanic nature.

elastic vapours, is the principal cause of these muddy eruptions. In addition to a few fragments of whitish marly schistus, that often appear to have been calcined, there are many pieces of ancient urns, or *amphoræ*, scattered about the upper cone, which render it probable, either that there was formerly upon the old mountain, prior to the eruption, a barrow containing urns; or that, in a more ancient eruption, the pagan inhabitants had filled some of these vessels, and placed them as a conciliatory offering to the subterraneous deities; or had thrown them into the pit; and that they had been again cast out and broken by a later volcanic discharge. Recent traces of small mud-streams, though in a dry state, were still visible, and seem to have flowed in the spring of the year 1794, when I saw this hill: for the mud-pits in its vicinity are generally in a fluid state throughout the wet season of the year. It is confidently asserted that, during a storm, when the sea and the neighbouring Leeman are much agitated, a considerable noise and ebullition proceed from the Kül-obo. The mud is, nevertheless, perfectly cold, and has a saline taste; but, when dry, it is not uniformly efflorescent with salt. On those parts of the hill, which are covered with mire, no other vegetable thrives except the *Camphorosma*; and, lower down, we noticed the *Statice scoparia*, a sufficient evidence of the saline quality of this mud. A person who accompanied me on the excursion, observed that, about four years since, a thin watery mire issued, in a manner boiling, from this pit, which was then surrounded with a sharp border: according to his account, the fluid was warm, and strongly impregnated with salt.—On the side of the eminence, towards the South, there is

is an evident opening for the mire; though, in the summer, it is completely dried up. The warmth, felt in the fissures of the dry mud, appears at first to be unnatural; but, on plunging the hand deeper into the cracks, the heat perceptibly decreases, and must therefore be attributed to the action of the sun on the surface. The minerals found dispersed on the top of the Kül-obo, and which have been thrown up with the mud, are as follow :

1. Grey and brown clayey iron ore, of a somewhat testaceous fracture; and which slightly effervesces with acids.
2. A fine-grained, very solid, grey sand-stone, glittering like quartz; it gives fire with steel, and does not effervesce.
3. A grey, soft, sandy slate, somewhat calcareous, and partly soluble in water.
4. A whitish-grey clayey schistus, breaking not unlike shells.
5. A marly schistus in thick layers, of a whitish-grey colour, and strongly effervescent.
6. A light and yellowish brown clayey schistus, in thin laminæ, and not effervescing with acids.
7. Fragments of selenite.

From the foot of the Kül-tepé, concerning the eruption of which there is no tradition, the road to Temruk descends into a broad level country, interspersed with sedge-grounds and small lakes: it occupies the whole tract of land as far as that town; is in some places less than a verst and a half in breadth; and separates the Leeman of Temruk from the Sea of Azof. In the very plain of this low valley, near the Leeman, along the shore of which I returned, I found a dry crater of mud, or *Putshina*, as it is usually called by the Russians inhabiting

habiting these regions. In the same level, there are a few eminences, with sepulchral barrows; and, on one of such elevations near the post-road, there appears to have been an ancient redoubt, of which I could obtain no information. It consists of a broad wall, forming a square, with bonnets or erections at the corners, and a salient angle at the western curtain. On the south side, near the eastern bonnet, is a wide passage: in the ditch, at the south-western corner, is a well of brackish water, of an hepatic taste; and, in the intrenchment, are some excavations, which appear to have served as subterraneous huts. Immediately beyond the post-house here established, we arrived at the *Pereffip*, a sand-hill, which, at its commencement, is more than a fathom and a half high: it resembles in form an oblong square rampart, being flat on its upper surface, and occupying the narrowest part of the isthmus between the Sea of Azof and the Temrukoi-Leeman, which is thus naturally defended. This sand-ridge, the border of which towards the shore is consolidated with sea-reeds, declines in the centre, and again rises towards Old Temruk, lying at the distance of six versts from the new city of that name: the former was situated on a hill, surrounded with water; was fortified by ramparts; and, according to tradition, was erected by the inhabitants of the island, with the view of restraining the Don Kozaks; who were accustomed to pay predatory visits, advancing in boats to the mouth of the Leeman.

The sea-winds having swollen the mouths of the Temrukoi-Leeman, and this place containing few remarkable objects, I was induced to return, in order to examine the mud-hill in the north-western angle of the island, which has lately excited
 much

much attention, in consequence of an eruption ; and thence to proceed to Yenikalé, by crossing the Severnaya-Koffa. According to the information I obtained, the modern Temruk, which is probably the *Pagus Cimbricus* of Strabo, is a wretched place, situated on a small elevation, surrounded by marshes overgrown with rushes : its distance from Taman was computed to be about sixty versts. A few versts farther, lies a fort built of rough stone, which is likewise encompassed by fens, and was formerly kept in repair by the Turks, but is at present abandoned : we passed it on the road to Kurkee, and it is also bounded by these extensive marshes, which spread along the river Kuban in a northern direction, along both mouths of the latter, called Tshernaya Protoka and Kafatshei Yerik, as well as along the Sea of Azof to the environs of Atshuef.



In the vicinity of Old Temruk, a remarkable phenomenon happened in 1799. As this event may serve to elucidate not only the theory of the muddy eruptions, often alluded to in the preceding section, but likewise that of volcanos, it here deserves particular notice. According to the most authentic accounts, confirmed by witnesses, who were present on the occasion, it was about sun-rise on the 5th of September, in the year above mentioned, when a subterraneous noise, and soon after a dreadful thundering, were perceived in the Sea of Azof, opposite to Old Temruk, about one hundred and fifty fathoms from the shore. This intestine convulsion was speedily followed by a report, not unlike that of a cannon; while the astonished

astonished spectators, who had attentively watched the terrific scene, observed an island of the form of a large barrow, rising from a cavity of the sea, about five or six fathoms deep, and proceeding above the surface of the water ; so that it occupied a space of about one hundred fathoms in circumference. At first, it appeared to swell and separate by fissures, throwing up mire with stones, till an eruption of fire and smoke occupied the spot. The sea was in those days so tempestuous, that no person would venture to approach the new island in a boat ; though it was elevated two fathoms above the waves ; being of a black colour from the dark mud of which it was formed. — On the same day, about seven o'clock in the evening, two violent shocks of an earthquake, after a short interval, were perceived at Ekaterinodar, which is two hundred versts distant from Temruk. — Various occupations, and febrile attacks, prevented me from undertaking, at that time, a journey to Taman, in order to examine this extraordinary phenomenon ; and in the following year I understood, with regret, that the newly-arisen island was either washed away by the force of the waves, or had spontaneously sunk, so that it was no longer visible. By the same account I was informed, that its length extended to seventy-two fathoms, its breadth to forty-eight ; and that it had settled at an elevation of seven feet above the surface of the sea.



On the 16th of June 1794, I continued my journey towards the Severnaya-Koffa, in order to visit the newly-formed muddy volcano; and afterwards to return, by crossing the Bosphorus.

The road from the sepulchral hillocks, before described, winds around the eastern bay of the Tamanskoi-Saliv, over a sandy plain diversified partly with barrows, and partly with steep sandbanks, drifted together by the wind, and called *Kutshugury*. At the angle of the innermost bay, we passed a singular ancient rampart, the foundation of which exceeds ten fathoms in breadth: it extends in a straight line from East to West, over the level country, at the distance of nearly one verst from the

sea ; having three distinct passages, and each of these exhibiting a kind of bonnets ; till, at length, it terminates in a hillock on the plain, without reaching any of the eminences in its vicinity. On the south-side of the mound is a broad shallow ditch, containing a saline humidity ; and, on the opposite side, are some excavations, from which the soil appears to have been taken, for the purpose of raising the rampart.

After having passed this ridge, or line, we gradually approached some elevated flats, abounding with luxuriant herbs : here a farm has been erected, on the ruins of the village of Tshokrak-Koi, having a spring of good fresh water that runs northwards through a clayey channel. A little farther, on the high plain, are several tombs surrounded with large slabs of a calcareous sandy schistus : they are irregularly scattered, sometimes extending East and West, and sometimes North and South : they are not of Tartar, but probably of Circassian origin. Two slender pillars, or tomb-stones, upwards of a fathom in height, are conspicuous among them. On the whole, we observed here a perfect resemblance to the graves near Tokluk, already described.

About eighteen versts from the great sepulchral vault, on the site of another village in a state of ruins, we arrived at the farm of M. Stankevitch, Lieutenant of Kozaks, being only six versts from the volcanic muddy eruption, discharged on the broad isthmus opposite to the city of Taman ; and which is so distinctly seen from every side, that I am inclined to consider it as the *Monumentum Satyri*, or sepulchre mentioned by Strabo.

The Tartars call this mound *Kuuk-Obo*, or the Blue Hillock ; and the Kozaks of Tshernomor'ski (who, since the eruption of

fire and mud, imagine it to be one of the infernal chimnies) distinguish it by the name of Prekla*. It lies in the middle of the broad angular isthmus, which partly forms the inner bay of Taman, nearly North-east from the city, and almost in a line with Yenikalé to the South-south-east. Its figure (as appears from the profile taken from Yenikalé, and given at the foot of the twelfth vignette) resembles a large heap of corn, gradually sloping northward; its perpendicular height above the level of the sea being about thirty-eight fathoms. The circumference of this eminence, at its base, is three versts and three hundred fathoms; its distance from the bay of Taman is nearly two versts and one hundred and eighty fathoms; but from Yenikalé, in a straight line, about fourteen versts. According to the report of a shepherd, who had often visited it prior to the eruption, there was in the centre of its summit a pit upwards of seven feet wide, and twenty-eight inches deep; in which, during the wet season, potable water was collected to the depth of nine inches: the whole upper part was covered with tall grass interspersed with a few rushes; and, as their vegetation was not checked by the mud overflowing the surface, it is evident that this mire was not in a hot state, when discharged from the interior of the mountain. The pit, here described, and the argillaceous soil mingled with fragments of stone, which compose the ancient superstratum of the hill, render it probable, that similar eruptions have taken place in very remote ages, and thus contributed to its present size.

In the year 1794, during my first visit in the Crimea, a remarkable phenomenon happened on this hill; and as it tends

* This is the term used to express Hell, among the inhabitants of Little Russia.

to elucidate the nature of the numerous muddy volcanoes * of different sizes, whether ancient or modern, I shall here insert a circumstantial account of its effects.

In March of the same year, Lieutenant CONSTANTINE LINTWAREF, Inspector of Quarantine at Taman, officially reported that, on the 27th of February, at half past eight o'clock in the morning, the following extraordinary events took place at the hill situated on the northern isthmus; which, across the bay, is only twelve versts distant from Taman, but sixty versts by the circuitous road over land. First, a rustling in the air was perceived, with a very violent gust of wind, that did not continue above a minute; and then a noise, resembling thunder, was heard from the hill: soon after, a column of thick black smoke burst forth from its summit, and was succeeded in about a minute by another of violent flame, which at that distance appeared to be at least fifty fathoms high, and thirty in circumference. This flame continued from a little after half past eight till within ten minutes of ten o'clock. An express was dispatched, as soon as the flame, the

* Observations on similar eruptions of mud near Baku, may be found in a German work entitled "*Sammlungen Russischer Geschichte*," vol. vii. pp. 337 and 338.; by the late meritorious M. MÜLLER, Counsellor of State; and in the Description of SOIMONOF; as well as in KAEMPFER'S "*Amœnitates Exotica*," p. 283. Here, and probably beneath Taman, lies an extinct carbonaceous schistus, which, together with the sinking of the incumbent strata, produces those effects. I am farther supported in this conjecture by the circumstance, that in the vicinity of Baku, walls and towers are found buried in the lake, at the depth of three fathoms, or three fathoms and a half (MÜLLER, *loc. cit.* p. 414.); while the inflammable vapours and springs of petroleum over the whole peninsula of Baku incontestably prove, that there are beds of coal still burning under ground.—The muddy volcano of Makuba, in Sicily, of which different travellers have given an account, is of a similar description.

vapour, and the noise had apparently subsided; but he returned with an account, that the hill had been rent, and presented an opening, the extent of which could not be ascertained; as every access to it was rendered impossible, by the sudden and successive streams of hot mud that overflowed it in every direction, and were sometimes accompanied with flames and smoke. The eruption, however, was not attended with any shocks of an earthquake.

According to the collected testimonies of persons, who witnessed the awful scene from Taman and Yenikalé, and who visited the mountain immediately after the eruption, it commenced with a noise resembling a peal of thunder, both in its strength and duration. Prior to and for some time after the report, the inhabitants perceived a whistling and rustling in the air. A white vapour ascended during the explosion, and was succeeded by a black sooty smoke, through which appeared a column of red and pale yellow flame, rising in a perpendicular line to double the height of the mountain, and spreading on the top not unlike a sheaf of corn; though a considerable wind agitated the atmosphere. The column of fire was visible for about twenty-five minutes, when it gradually vanished, but the smoke continued from four to five hours; dispersing itself in thick heavy clouds on both sides, which also subsided on the following day. During the first explosion, the hill threw up quantities of mud into the air, and scattered it about in every direction to the distance of a verst. The great mass of mud proceeded from the gulf, or crater, by raising and removing the argillaceous earth from the surface, which at that time was frozen to the depth of seven feet. At first it flowed rapidly,

rapidly, then gradually flower, on all sides of the hill; and, according to the information of credible witnesses, who, a few hours after the eruption, rode thither from the farm, it was not perceptibly warm, though a thick vapour arose from it, owing to the cold state of the atmosphere. Some Kozaks, dispatched to the place, on the contrary, assert that the mud, when first disgorged, was hot. The confused whistling, and bubbling noise were heard till a late hour of the night; and the mud was forced out sometimes to the height of twelve feet, even on the third day. Since that period, the mountain once more commenced to discharge and throw up mud above its summit; but no fire was visible, either during the day or at night. In March, a land-surveyor was sent from Taman, in order to take a plan of the Kuku-obo, which is communicated in the twelfth vignette. He ascertained the first opening *A.*, on the top of the hill, to be from ten to twelve fathoms wide, and the true gulf, or crater, *B.* within it, to be about three feet six inches in diameter. He also observed a vapour occasionally ascending, and mud, mingled with rock-oil, flowing out; of which he brought some specimens of a strongly bituminous nature. The currents of mud *C.C.C.* were nearly of the same extent as I found them in the ensuing summer.

The summit of the mountain was for some time inaccessible, on account of the deep, soft, viscous mud, with which it was surrounded. But, after being hardened by the continued drought, the whole mass could be passed over, and examined. When I visited this hill, the state of the mud, and of the opening, was as follows: On its surface appeared a disgorged mass of mire, which may be estimated at one hundred thousand cubic

cubic fathoms : it covered the whole upper part of the hill, and was dispersed in various irregular currents, spreading particularly over the West and South sides ; its depth being from two to three arshines, or from four feet eight inches to seven feet ; and the whole resembling in consistence a stiff pudding with a thick edge. The North-eastern stream is the deepest and most considerable, being very broad at its upper part, and extending, together with a narrower one in the West-south-west quarter, as far as the level basis of the mountain. The former is almost four hundred fathoms, and the latter is upwards of three hundred fathoms in length. Three others, nearly parallel on the North-west, and one branch to the South, are both smaller and of less extent. Lastly, on the eastern side, the mud had formed only a prolonged round mass ; being interrupted in its farther progress over that part of the mountain by an elevated ridge. On the surface of all these streams of mud, I noticed a few small heaps, especially towards the edges, accumulated by the pieces of dry crust, which had been thrust together by the pressure of the fluid mass, not unlike what happens in the breaking up of ice. In two places, the mud had in a manner formed petty isles, by surrounding the elevated ground. On the upper part of the mountain, around the gulf that discharged this enormous mass from the bowels of the earth, it is somewhat thicker ; and, on one side of the crater, there lies a semi-circular piece of the old argillaceous super-stratum, nearly a fathom in extent, and above two arshines in depth : it is yellower than the fresh mud, and appears to be one-half of the lid that formerly covered the gulf ; being turned over, and partly buried in the mire. The South-western stream only

(in

(in which direction the summit of the hill more suddenly declines, and is in a manner furrowed) is overflowed by a more liquid mud, which seems, at different intervals, to have excavated a channel resembling that of a rivulet, and being about twelve paces broad : at the bottom, however, it is lost in the thick layer of more solid mud, where the drier matter is collected into several heaps. Beneath the mire, in this neighbourhood, I found not only various specimens of very brilliant pyrites, in cubic crystals, partly loose and partly attached to the marl, in a perfect state, but likewise met with the same fossil inserted in the crevices of the marl-stone ; a sufficient proof, that such pyrites had been expelled from the superior stratum, which had undergone no changes by fire. The mud itself, the largest stream of which is from sixty to one hundred fathoms broad, was then but superficially covered with a dry crust : being cracked, it was unsafe to walk over it ; and, on removing a piece from the top, the subjacent part was soft and adhesive like moistened clay. On account of its rugged and uneven surface, it was as difficult to pass over the mire, as if it had been congealed by the frost.

The whole of this prodigious mass is perfectly uniform, resembling a blueish-grey fat clay, interspersed with fine particles of mica. When moist, it may be kneaded ; but, in a dry state, it separates, like the clayey mud of roads, into irregular pieces, or crumbles into fragments, leaving crevices of ten, two, or three inches broad ; though it retains some solidity, when in lumps. I could not discover any vitriolic, and in a few places only a trifling saline efflorescence on the surface of the mud : by the test of acids, it produced a slight effervescence.

The largest of the fragments of stone, dispersed through this mass, and not amounting to the two thousandth part of the whole, are of the size of two clenched hands ; but most of them are small, some being of a recent fracture, and others slightly polished. They consist principally of the following sorts, which are pure, occasionally reddish, and in a manner burnt, though not decomposed :

1. A grey, partly sonorous schistus, of marly clay, in flags half an inch thick, slightly effervescent with acids.
2. A similar fossil in thicker layers, and in pieces of hard fracture, but frequently radiated ; and the fissures of which are sometimes incrustated with pyrites.
3. A brownish-grey loamy schistus, in pieces of an inch thick, sometimes smooth, of an earthy fracture, and not effervescent.
4. An earthy, whitish, friable, argillaceous schistus, that splits longitudinally like wood ; is also divided into perfectly round annual rings, and does not effervesce with acids.
5. A solid whitish-grey lime-stone, in layers two inches thick, and sometimes exhibiting obscure characters in its fracture, which is generally smooth.
6. A dusky-grey, lamellated, marly schistus, slightly effervescent, in layers scarcely from a half line to a line thick, and of an earthy fracture.
7. White chalk, of a coarse, earthy consistence.
8. A hard, whitish, calcareous schistus, which is strongly effervescent ; and, when broken, presents numerous glittering points.

9. A dusky-grey, friable, slimy schistus, in thin plates interspersed with small particles of mica, crumbling between the fingers; being remarkably bituminous; and likewise strongly effervescent.
10. A martial, very hard, grey, heavy, argillaceous stone, containing detached particles of pyrites, not effervescent, and of a smooth testaceous fracture.
11. Brown iron-stone, very little effervescent, breaking like shells, in small plates, and pieces of an angular figure.
12. A similar brownish-grey mineral, heavier than the former, and not affected by acids.
13. A grey, solid, argillaceous stone, not effervescent, and interspersed with small vegetable particles.
14. A whitish calcareous marly schistus, in thin layers.
15. A blueish-grey calcareous marly schistus, in thin laminæ.
16. A brown, thinly laminated, friable, earthy, bituminous, marly schistus.
17. A grey argillaceous schistus, in thin layers, rather friable, and not effervescent.
18. Whitish, solid, calcareous stones, kidney-shaped, about the size of a fist, and internally full of cracks: they are remarkably crystallized, and strongly effervescent.
19. A similar hard, knotty fossil, difficult to break, earthy in its fracture, and entirely soluble in acids.
20. A grey, hard, kidney-shaped, argillaceous stone, without any calcareous admixture; of a hornstone-like but earthy fracture; inclining to white in the fissures. There are also some of a yellowish colour.

21. Greyish-white, compact, kidney-stones combined with lime; strongly effervescing with acids, and having an earthy fracture: they are somewhat soluble in water; but in acids, after a long and violent effervescence, fall to a grey earth, and present the appearance of ashes, or a miry earth, mingled with lime.

The crater, which has thrown out this enormous mass, was now entirely covered with a hard dry crust of mud, sufficiently strong to bear the weight of a man. It measured, as far as could be judged from its depth, somewhat more than twelve Paris feet in diameter. At its side were seen, in the mud, several traces of smaller apertures, about twenty-eight inches in breadth, and which had probably been formed by the more liquid matter, at a later period. On inclining the ear to the great cavity, a noise was distinctly heard from the bottom, similar to the boiling of a large covered kettle; which, while I was on the hill, I could clearly distinguish like the whistlings of a tempest, accompanying distant thunder.

My ideas concerning this volcanic eruption of mud, and its physical causes, I have detailed in a French publication*, which has been translated into the Russian and German languages: nor do I see any reason to retract what I have there advanced, even after the event last described; though an island has, under similar circumstances to those which accompanied the discharge of the Kuku-Obo, since arisen in the Sea of Azof. On the contrary, this only renders the hypothesis more probable, that, at a considerable depth under the island of Taman

* *Tableau géographique de la Tauride*, 4to. and reprinted in 8vo.

as also beneath part of the peninsula of Kertsh, there is a stratum of coal or bituminous schistus in a state of slow combustion ; and that, in consequence of the discharges which happen so frequently and in so many places, the sea breaks in, and forms bays in the hollows, that have become extinct : hence are generated various kinds of vapours and gases, which by their elasticity force themselves through the clefts of the superincumbent strata, or through old craters ; or, where they meet with less resistance, make their way upwards with a loud report ; and thus give rise to all the phenomena before mentioned, and also to transient inflammations of hydrogen gas, on the accession of external air. As soon as the force of the vapours, which supported the stratum incumbent on the burning layer, has subsided in consequence of having found a vent, the fragments of this shattered horizontal stratum fall in succession, and by their pressure discharge the mud, consisting of ashes and sea-water, at first with rapidity, but afterwards more slowly, through the newly formed apertures. Hence we may account for the saline nature of this mud, which still rises with bubbles of vapour, as also for the roots of sedge, which have in some cases been carried by the sea-water into these subterraneous cavities and mingled with the mud ; and, lastly, for the fragments of various fossils, through the superincumbent strata of which the vapours have forced their way. But, that such eruptions should mostly take place on hills (where the resistance is doubtless greater than on level grounds), may probably be explained by those hills having likewise been produced by more ancient eruptions, and thus containing ready-prepared craters, through which the vapours found a more easy passage :

this appears to have incontestably been the fact, in those of the Kuku-obo and the Kül-tepé above described. The rent appearance of the foil of Taman, with the gulfs and bays that divide it, may perhaps be ascribed to the gradual sinking of strata on the coast of that island.

Before I conclude my account of Taman, I shall say a few words respecting the Kozaks of Tihernomorſki, who are sprung from the ancient Kozaks of Saporogi, and to whom this island, with all the territory between the rivers Kuban and Yei as far as Uſtlabinkoë-Krepoſt, has been granted. Although, after the abolition of their *Syeth* and ancient constitution, in the year 1774, part of this once powerful body of unmarried Kozaks, who defend the whole of the low country on both sides of the Dniepr, revolted and deserted to the Turks, yet even in the last Turkish war they so far recovered the Imperial favour by their voluntary submission, and some bold services rendered to the Russians both by sea and land, that, beside the grant of the above-mentioned district, the defence of the then unoccupied frontiers of the Kuban, which had been agreed on at the peace of Kutshuk-Kainardſhee, was committed to their charge. The Ukases to this effect, which were published on the 30th of June and 1st of July 1792, gave them all the privileges of other bodies of Kozaks, together with the full property of the foil, fisheries, salt-marshes, and the right of retailing spirits: they likewise permitted all those who had formerly served in the *Syeth*, and all the families of the Kozaks then in the service, to muster and make up their complement fifteen thousand

land men, to be governed by their own Koshevoi and Starshines, and to receive annually, for the defence of the frontiers, a salary of twenty thousand rubles. Farther, to those who were willing to remove to Taman with their families, the sum of thirty thousand rubles was given on their first settlement; and, for their subsistence, the additional sum of twenty-five thousand rubles for one year, to be paid by the Governor of Taurida; under whose jurisdiction the Kozaks of Tshernomorski were in future to remain.— By virtue of these Ukases, and of the important privileges granted to the whole body, a considerable number of settlers, from Little Russia and the Ukraine, in the following year, joined those Kozaks who had survived the war; so that, in 1794, according to the official reports received from that country, they amounted to twelve thousand men. But the unhealthiness of the climate on the lower banks of the Kuban, annually sweeps away a great number of the inhabitants, chiefly during the prevalence of malignant fevers, which often prove suddenly fatal. The insalubrity of the country proceeds not only from the humidity of the soil, which is very injurious in all hot climates (wells being almost every where discoverable so near the surface, that the water may be reached by the hand), but also from the thick fogs descending from the mountains; the calms experienced here during the summer; the negligence of the Kozaks in thinning the woods around their villages situated in the low lands; and the bad quality of the water, even that of the Kuban, occasioned by its bed being so marshy, that the very fish, abounding there, have a disagreeable taste. The soil, however, is exceedingly fertile, and well adapted to every purpose of husbandry.

husbandry. There is likewise plenty of game; though pheasants, which were formerly numerous, are now become less frequent; but of fish there is great abundance. With better management, the country would afford most excellent pasture for cattle. The healthiest spot is the island of Taman, the population of which is still inconsiderable, having been greatly diminished by the ravages of the plague in 1796: Horses thrive here uncommonly well. The rich fishery of Atshuef, where all kinds of sturgeon are caught, might also become a source of riches, if it were sufficiently attended to; as the caviar, prepared by the Kozaks of Tshernomoraki, is already preferred to that of Astrakhan, and exported in large quantities from Taganrog to Constantinople.

The principal settlements of the Kozaks of Tshernomoraki are, Taman, Temruk, and Atshuef, together with the villages or kurens along the upper banks of the Kuban. The capital, or seat of the *Koshevoi* and Council of War (*Voiskovaya Kanzellaria*), is Ekaterinodar, two hundred and sixty-two versts distant from Taman. In these places, about two-thirds of the whole body generally reside; a thousand men occupy the lines towards the mountains, and those separating the restless Circassians; a similar number are stationed in and about Ekaterinodar, as a body of reserve; one thousand are computed for manning the flotilla that lies in the Bugas, consisting of about twenty light vessels; and, in time of war, a detachment of a thousand men is commonly ordered to the army. They have also upwards of one hundred pieces of artillery, of different calibres, which are disposed, partly on board the flotilla, and partly at various posts.

The growth of vegetables in Taman, notwithstanding its sandy soil, is uncommonly luxuriant, on account of its constant humidity. The plants, which I observed generally to prevail in the month of June, are the following :

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| <i>Veronica spicata.</i> | <i>Asparagus vulgaris.</i> |
| — — <i>paniculata.</i> | <i>Asparagus volubilis.</i> |
| <i>Lolium perenne.</i> | <i>Hyacinthus maoticus.</i> |
| <i>Melica lanata.</i> | <i>Ornithogalum narbonense.</i> |
| — — <i>altissima.</i> | <i>Allium descendens.</i> |
| <i>Holcus odoratus.</i> | — — <i>pallens.</i> |
| <i>Panicum viride.</i> | <i>Dianthus dichotomus.</i> |
| — — <i>crus Galli.</i> | <i>Cucubalus Otites.</i> |
| <i>Elymus Medusae.</i> | — — <i>tataricus.</i> |
| <i>Scabiosa ucranica.</i> | <i>Gypsophila paniculata.</i> |
| <i>Gallium verum.</i> | <i>Polygonum Convolvulus.</i> |
| — — <i>glaucum.</i> | <i>Peganum Harmala.</i> |
| <i>Sium Falcaria.</i> | <i>Agrimonia Eupatoria.</i> |
| <i>Pimpinella dioica.</i> | <i>Euphorbia segetalis.</i> |
| <i>Statice Coriaria.</i> | <i>Reseda lutea.</i> |
| — — <i>trigona.</i> | <i>Rubus fruticosus.</i> |
| <i>Verbascum nigrum.</i> | <i>Prunus spinosa.</i> |
| — — <i>Thapsus.</i> | <i>Rosa pygmea.</i> |
| <i>Eryngium campestre.</i> | <i>Potentilla recta.</i> |
| <i>Salsola Tragus.</i> | <i>Delphinium consolida.</i> |
| — — <i>Kali.</i> | <i>Thalictrum majus Jacq.</i> |
| <i>Onosma echioides.</i> | <i>Teucrium chamaedrys.</i> |
| <i>Echium rubrum.</i> | — — <i>sibiricum,</i> com- |
| — — <i>altissimum Jacq.</i> | monly bearing white |
| — — <i>vulgare.</i> | flowers. |

<i>Marrubium peregrinum.</i>	<i>Senecio Jacobaea.</i>
<i>Salvia Aethiops.</i>	<i>Centaurea amara.</i>
— — <i>nemorosa.</i>	— — <i>paniculata.</i>
<i>Phlomis herba venti.</i>	— — <i>tatarica.</i>
<i>Antirrh. genistifolium.</i>	— — <i>salmantica.</i>
<i>Melampyrum arvense,</i> with pale and white flowers.	— — <i>scabiosa.</i>
<i>Stachys annua.</i>	— — <i>solstitialis.</i>
<i>Lamium purpureum.</i>	<i>Artemisia austriaca.</i>
<i>Orobanche laevis.</i>	— — <i>Santonica.</i>
<i>Lepidium falsum,</i>	— — <i>Absinthium.</i>
<i>Sisymbrium altissimum.</i>	— — <i>campestris.</i>
<i>Crambe maritima.</i>	<i>Xeranthemum annuum.</i>
<i>Bunias Cakile.</i>	<i>Achillea millefolium.</i>
<i>Melilotus flava.</i>	<i>Onopordum acanthium.</i>
<i>Medicago falcata</i>	<i>Carduus nutans.</i>
— — <i>cochleata.</i>	— — <i>acanthoides.</i>
<i>Coronilla varia.</i>	— — <i>polyanthemus.</i>
<i>Lathyrus pratensis.</i>	— — <i>cyanoides.</i>
— — <i>tuberosus.</i>	<i>Inula germanica.</i>
<i>Vicia cracca.</i>	— — <i>oculus Christi.</i>
<i>Astragalus onobrychis.</i>	<i>Carthamus lanatus.</i>
<i>Glycyrrhiza glabra.</i>	<i>Chrysanthemum segetum.</i>
<i>Hedysarum onobrychis.</i>	<i>Cichorium Intybus.</i>
<i>Tragopogon pratense.</i>	<i>Gnaphalium arenarium.</i>
— — <i>orientale.</i>	<i>Alcea ficifolia.</i>
	<i>Hypericum perforatum.</i>

The ancient villages, built by the Circassian and Tartar inhabitants of this country, as also those of the Kozaks of Nekrasov, are entirely demolished, and nearly levelled with the ground. Of the

the old Greek cities, still fewer vestiges are left, except the city of Taman, and the inscriptions on stones, that are found in various parts of the island.

The ferry-boat for crossing over to Yenikalé, being stationed at the Severnaya-Koffa, where the Bosphorus is only four versts broad, I departed early on the 17th of June, in order to reach the latter place. Immediately beyond the ruins of the village of Bushukoi, we noticed various sepulchral hillocks, and a very high fortification. Its form is that of an oblong, square redoubt, with bonnets at the angles, and an entrance from the sea-side; the whole being about sixty-five paces in length, by fifty in breadth, and surrounded with a very shallow moat overgrown with weeds. From this fort, I saw at a distance, between two small bays formed by the Tamanskoi-Saliv within the Severnaya-Koffa, a barrow with a flat top, but steep towards the sea. Curiosity induced me to visit it; and I was rewarded with a complete view of the interior of a sepulchre, erected by the ancient Bosphorians, and containing urns. Here I could clearly distinguish the manner in which the loamy earth had successively been accumulated in convex strata. Beneath were the cineraries, disposed by the side of and above each other; being more or less covered with earth. Beside the large unglazed urns of red earthen-ware, there were also some short thick pipes of clay, placed in this barrow for some unknown purpose, and having a flat stone above and below. All the fragments of these urns were in their original situation; one of them was of the singular form delineated at Fig. B.,

Vignette 10. ; and appeared to be four spans and two-thirds in diameter, by three spans in height. I saw several common cineraries of a smaller size, consisting of flat stones put together in the same manner as that represented in Vignette 10. But the ashes and bones of some of the deceased seemed to have been loosely thrown upon a bed of soft sea-weed (which plant had become perfectly white), and to have been covered with earth. Beside the human remains, I noticed some bones of horses ; from which it may be inferred, that such tumulus had been erected over the bodies of those who had fallen in battle. Adjacent to this hillock, was apparently the commencement of another barrow, flatter and more remote from the sea ; and, in the neighbourhood, there were traces of some ancient ponds.

Departing hence round the bay, and again taking a northerly direction towards the road, we descried at a small distance from the Severnaya-Koffa, among various sepulchral tumuli to the right, another work resembling an ancient fortification : it was in all respects similar to the above-described oblong square ; having raised angles and a moat, now overgrown with weeds. Around it were four large, and an equal number of small, sepulchral hillocks, originating from battles, or assaults that had taken place on this fortress. The *Vicus Achilleus*, of Strabo appears to have stood neat this spot ; though I would by no means insinuate, that such intrenchment indicates its situation.

Soon after I arrived at the Severnaya-Koffa itself, which is a narrow, low isthmus, scarcely a fathom above the level of the sea ; extending in a direct line to the South-west ; and divid-

ing the bay of Taman from the Bosphorus. At first, it is in many places only from twenty to fifty fathoms broad, but its breadth progressively increases; and, on the side next the bay of Taman, it forms, by the continual growth of reeds on the adjacent shoals and banks, several extensive recesses and marshy hollows, which are the favourite resort of wild boars. It presents, however, on the side next the Bosphorus, a flat sandy shore, on which are found great quantities of marine shells. It commences about six or seven versts from the farm of Bushukoi, and is about eighteen versts in length: among the reeds were heard many blackbirds. The passage over the Bosphorus, from the neck of land to Yenikalé, is the safest and most convenient; being only four versts. During calm weather, we could clearly distinguish in the strait a smooth line or streak, crossing the channel, where the yellowish current from the Sea of Azof meets the dark-coloured waters of the Black Sea; and this current usually sets outward, unless it be opposed by the wind.

On the 20th of June, I returned to Kertsh, determined not to leave its vicinity till I had visited the coast as far as Point Takil-Burun; which appeared to be interesting, on account of a blue earth thence obtained. At this point, the Bosphorus begins to take a southerly direction.

The greatest elevations in the stratum of lime-stone are those around Kertsh, presenting the hillocks already mentioned. Towards the low country of Kamysh-Burun, which is interspersed with small lakes, and on approaching the long lake of

Tshurabash, which extends to the North-west, these eminences decline, and again rise to an elevated plain, near Kara-Burun. Soon after, we descended to an oblong salt-lake called Shungulei, and lying near the flat shore: it extends from East to West; is about eight versts in length, and about sixteen versts distant from Kertsh; but, in consequence of the numerous springs and torrents, that flow into it from the high lands, especially from the North-west, it seldom forms any saline deposition. Like all the other salt-lakes in the Crimea, it is separated from the sea only by a low and narrow sand-bank, over which the waves appear to be driven during tempests. Around its banks are several Tartar villages, situated near springs and fountains; namely, Tobetshik, Orta-Saraimen, Ortel, Kopinegen or Kopetshegen, and Shungulek. The shore is, hitherto, in high rocky places, from eight to ten, and even fifteen fathoms above the level of the sea. About nine versts from the salt-lake, we arrived at the coast of the Takil-Burun, which is of similar height, but gradually declines. Beneath this, and near the surface of the water, there is a stratum of ochreous iron ore, abounding with shells, and nearly resembling that below Taman already described. From this layer, a beautiful sky-blue ferruginous earth has been dug, in lumps and veins, which the regiments of chasseurs at Kertsh and Yenikalé have almost entirely consumed as a material for painting. The most remarkable objects in such fossil are the shells found in the blue earth, with which they are completely filled. Of these I obtained some specimens: though calcined, they were solid, in good preservation, and of the same elegant species, that are found interspersed in the ochre near Taman.

In

In some of these bivalves, a radiant selenite of a very dark blue colour had formed in the centre of this earth; such as I had not observed in any other situation.

On the heights of Takil-Burun, are seen ruins of houses, which, however, appeared to be of modern erection. From these eminences, I returned in the night through Ortel into the post-road, which I reached near the stage of Akkos; whence I pursued my route to Akmetshet.

The peninsula of the Bosphorus formerly presented a greater number of considerable places than other parts of the Crimea. Here, likewise, occur more vestiges of antiquity, relating to the times of the Greeks, as well as of the Genoese and Venetians. Thus, beginning from the sea of Azof, where the Venetian factories are chiefly discoverable, traces of former settlements are found on the *Kasan-dip*, or Kettle-Promontory; which projects to a considerable distance into the sea, in a round form, with elevated stratifications of lime-stone, but is apparently sunk in the middle; it extends between Arabat and the Bosphorus, where the ruins of a church are still discernible, and in the vicinity of which lies the great salt-lake of Aleeynsköe. Still farther, on the point of land called Ufuk-Kalelli, about sixteen versts to the west of Cape Fanary, at the mouth of the Bosphorus, there appear the ruins of a settlement, which the Tartars assert to be of Genoese, though it is probably of Grecian origin. Similar vestiges are found on Mount Opuk, which abounds with tulips; being situated on the Black Sea, about sixteen versts to the west of point Takil-Burun, where even ships of war find excellent anchorage. Some traces of another town are discoverable near point Tash-Katshik,

Katshik, at the eastern extremity of the bay of Kaffa, in the vicinity of which there is likewise a salt-lake.

On comparing all these vestiges of ancient colonies along the coast with the geography of Strabo, and the *Periplus* of Arrian, and *Scymnus Chius*, the names of the former settlements may be ascertained with tolerable accuracy. Thus, *Myrmecium*, which is noticed as twenty-five stadia, or five versts, from *Panticapaeum*, appears to have occupied the spot, now distinguished by a ruined tower, and some wells on the sea-shore, between Kertsh and Yenikalé. *Porthmion*, which is probably the same with the *Parthenium* of Strabo (unless it were the above mentioned Ufuk-Kaleffi), must have been situated exactly on Cape Fanary, which contributes to form the narrow channel of the Bosphorus, leading to the sea of Azof, and the *Vicus Achillaeus* in the opposite part of the island of Taman, on the Asiatic side of the Bosphorus.—*Nymphaeum*, the distance of which Strabo does not precisely state, appears from the *Periplus* to have stood in the environs of the bay, between the present battery of Pavlofsköe and the Kamyshburun. I regret that I could not examine this part of the coast with sufficient minuteness to discover the remains of that place.—The Greek colonies of later date, on the European side, and which are not noticed by Strabo, were, according to *Scymnus*, as follow:

1. *Acros-comion*, sixty-five stadia, or thirteen versts from *Nymphaeum*, which distance determines its site precisely at Takil-Burun.
2. *Kytas*, thirty stadia, or six versts, must have stood somewhere between Takil-Burun and Mount Opuk.

3. *Cimmerium*,

3. *Cimmerium*, sixty stadia, or twelve versts, which brings its situation to the ruins of Enken-kalé, near Mount Opuk: here are safe roads for ships of war, with good anchorage, and shelter from the North-west winds.
4. *Cazeca*, one hundred and eighty stadia, or thirty-six versts, seems even in its present name to agree with Point Tash-Katshik, which forms the eastern extremity of the bay of Theodosia; where springs, and vestiges of an ancient colony occur, together with a salt-lake in its vicinity.
5. *Theodosia*, though it does not exactly coincide with the present town of that name, according to the distance stated in the Periplus, must in all probability be the same; as I could discover no traces of an ancient city near any other part of the bay.
6. *Athenæon*, two hundred stadia, or forty versts, from Theodosia, was most probably situated at Point Koos, or near the harbour of Sudagh; consequently the port of the Tauro-Scythians, or *Lampas*, corresponds with the present Lambat. Farther, the Ram-head, or *Criumetopon*, agrees with the high mountains surrounding the district of *Alupka*; the harbour of *Eubulon*, or *Symbolon*, with *Balaklava*; and, lastly, the city of *Cheronefus* is sufficiently distinguishable by its ruins. The distances of all these places pretty accurately correspond with those specified in the Periplus.



General Remarks on the Peninsula of the Crimea.

I.

ON THE INHABITANTS.

THE population of the Crimea formerly amounted to at least half a million. Its first diminution took place in 1778; when, in consequence of the peace concluded with the Turks, above thirty thousand Christians, as well Greeks as Armenians, being at that time settled in Crim-Tartary, (comprehending many tradespeople, useful artisans, and manufacturers,) were removed to the country between the Don and the Berda, beyond the Sea of

of Azof. Still more numerous was the emigration of the Tartars, soon after Russia had taken possession of the Crimea, from the year 1785 to 1788. During this period, many thousand Tartars, especially in the parts adjacent to the maritime towns, sold their property and goods at the lowest prices, and withdrew to Anatolia and Romelia, whither almost all the surviving individuals of the then reigning family of Ghirei, and many nobles, also retired; not to mention those who were killed in the preceding troubles, or were afterwards destroyed by the plague, and by various insurrections. Thus, in the year 1793, when a census was taken throughout the empire, there were in the whole district of the then erected government, or *Oblast* of Taurida, no more than 85,805 males and 71,328 females, together 157,125 persons including all ages: namely *,

	Males.	Females.
Tartar nobility, or Murfes, -	570	465
Priests of all classes, - -	4,519	4,105
Common Tartars employed in agriculture,	48,484	99,280
Slaves of various nations, -	343	405
Nagays, taken prisoners at the capture of Anape, and distributed among the nobles, - - - - }	4,331	3,593
Gypsies, - - - -	1,664	1,561
Merchants, and traders in the towns, of various classes, - - }	1,780	1,048

* This calculation widely differs from the total number here stated, as is evident on comparing only the data of the females with each other: it was therefore impossible to reconcile such inaccuracy. — *Transl.*

Citizens

	Males.	Females.
Citizens and artifans, - - -	6,220	5,346
Servants of all descriptions, - - -	1,185	247
Ruffian household flaves, - - -	110	116
Ruffian colonifts under the Crown, - - -	4,861	3,397
Settlers newly eftablifhed by the nobility,	1,987	1,672
Perfons belonging to the Greek Regiments,	1,165	586
Kozaks of the corps of Tfhernomoriki,	5,803	
Minifters of the Christian religion, and } fervants of the Church, - - - }	89	33
Servants and officers of the Crown, } with their families, - - - }	382	270

This population, which at firft was very incorreclly computed, received confiderable additions by the new cenfus in 1796, efpecially with refpect to the Tartars; who were before calculated to be rather more than 60,000 males, but then already amounted to 90,000: and, as it was permitted by an imperial order in 1800, to rectify the errors that might have occurred, the number of the Tartars was, on clofer inveftigation, found to be 120,000 males of all ages and conditions; nor, perhaps, is this calculation fufficiently accurate.

The Tartar inhabitants of the Crimea may be divided into three claffes. The firft includes the Nagays, of whom I have fpoken in the preceding volume of thefe Travels, pp. 531, and following; as alfo thofe Nagays, who, being a remnant of the Tartars of the Kuban, were taken prifoners in the Turkish fort of Anape, and, to the number of 4,500, carried into the Crimea; where they were difperfed among the nobility for their maintenance; but afterwards, by order of the Court, they were

con-





goules del

Modland sculp



Grauer del.

Melband. sculp.

considered as subjects, and still dwell in their own permanent villages; having acquired opulence by rearing cattle and cultivating lands, from which they are enabled to pay high rents to their landlords. All these Nagays are, as their features evince, the unmixed descendants of the Mongolian tribe, who formed the bulk of the army of Tshingis-Khan, which invaded Russia and the Crimea.

The second class consists of those Tartars, represented in Plate 20, who inhabit the heaths or steppes as far as the mountains, especially on the North side; and who in the district of Perekop, where they are still unmixed, retain many traces of the Mongolian countenance with a thinly scattered beard; they devote themselves to the rearing of cattle to a greater extent than the mountaineers, but are at the same time husbandmen, though they pay no attention to gardening. In situations destitute of stone, they build, like the inhabitants of Bucharica, with unbaked bricks of clay, and make use of dried dung for fuel; of which they prepare large quantities, and pile it up in the same manner as turf, to serve them during the winter. Nearer to the mountains, these Tartars, as well as the nobles, are more intermixed with the Turkish race, and exhibit few of the Kalmuk-Mongolian features: this observation also applies to the Crimean nobility, in whom those peculiarities are almost entirely obliterated.

To the third class belong the inhabitants of the southern vallies, bounded by the mountains; a mixed race, which seems to have originated from the remnants of various nations, crowded together in these regions at the conquest of the Crimea by the armies of the Mongolian leaders; and which in part (as

has already been stated) display a very singular countenance, with a stronger beard, but lighter hair; the other Tartars not considering them as true descendants of their race, but giving them the contemptuous name of Tat*. They are also, by their costume, (Plate 12.) remarkably distinguished from the common Tartars of the heaths, as represented in Plate 20; though the dress and veils of the women are alike. Their houses, or huts, are partly formed under ground; being generally constructed against the steep precipices of mountains, one half excavated from the earth, or rock, and only the front raised with rough stones; having at the same time flat roofs covered with earth. There are among them skilful vine-dressers and gardeners, but they are too idle to undertake new plantations, availing themselves only of those left by their predecessors, especially the industrious Greeks: hence very few young trees are seen in their gardens. They also grow flax and tobacco, which, as objects of culture, are unknown to the Tartars of the heaths; with proper encouragement, they might probably be induced to cultivate the vine, and attend to the production of silk. On the whole, they are at present unprofitable and unworthy inhabitants of those paradisaical vallies, in which they have always shewn themselves the first and most ready to revolt against the Russian Government. These thoughtless people even destroy the forests on the mountains in the most effectual manner, partly by their indiscriminate felling of trees, and partly by their numerous herds of goats. In the last war with Turkey, they were all ordered to dwell at the distance

* From the Turkish word *Mur-Tat*, which signifies a renegado.



males del

Medland sculp



Gaston del.

W. Hand sculp.

of ten versts from the coast, in order to avoid the danger arising from their acting as spies and traitors : it would, indeed, be for the general good, to remove them entirely from these vallies into the interior of the country ; at the same time peopling the former with industrious settlers, who would contribute to the prosperity of the empire, by the cultivation of wine, oil, silk, and cotton ; which will never be attempted by the present inactive possessors.

In the costume of the Tartars inhabiting the plains, there is some variety. Young persons, especially those of noble or wealthy families, dress nearly in the Circassian, Polish, or Kozak fashion, as exemplified in the standing figure of plate 21, with short, or slit, sleeves in the upper garment. The nobility of more advanced age wear, like the common Tartars, unslit sleeves ; and old men suffer the whole beard to grow ; whereas the young and middle-aged have only whiskers, as represented in the same plate. Their legs and feet are dressed either in half-boots of Morocco or other leather, or they use stockings of the same material, especially in the towns : over these are worn slippers or clogs, for walking abroad ; and, in dirty weather, a kind of stilt-shoes. Their heads are uniformly shaved ; or, at least, the hair is cut very short, which they cover with a high cap, quilted at the top with cotton, and generally green, being edged with black or grey lamb's skin. This cap is never moved by way of compliment. The clergy and the aged wear under it the *Fez*, or a red, woven calotte. Those who have performed a pilgrimage to Mecca, are distinguished by a white handkerchief round the edge of their cap ; such being the mark of a *Hadshi*. There are also in the

Crimea some Emirs, who wear the green fillet round their head. Among the young nobility, however, Circassian caps are the most common head-dress.

The physiognomy of the true Tauridan Tartars bears great resemblance to that of the Turks and Europeans. There are handsome, tall, robust people among them; and few are inclined to corpulency: their complexion is rather fair, and they have black or dark-brown hair. The boys and youth have mostly a pleasing and delicate countenance; to which circumstance, together with the restraints imposed on women, may, perhaps, be attributed the odious propensities prevailing here, as well as in Turkey and Persia.

The dress of the Tartar women (Plate 22) is very different from that of the Nagays: they are in general of low stature, owing probably to their confined treatment in early life; though their features are tolerably handsome. Young women wear wide drawers; a shift reaching to their ancles, divided before, and drawn together at the neck; a gown open in front, made of striped silk, with long sleeves, and adorned with broad trimmings embroidered with gold: they have also an upper garment of some appropriate colour, with short, thick Turkish sleeves, edged with ermine, fur, or gold lace. Both girls and married women fasten their gowns with a heavy cincture or girdle, having in front two large buckles, like those made by the Armenians and Jews, of embossed or filigrane work; and which were once in fashion among the Russian ladies at Petersburg and Mosco. Their hair is braided behind in as many loose tresses as it will afford; and is covered either with a small red cap or *Fez*, especially during childhood,



or with a handkerchief crossed under the chin. Their fingers are adorned with rings, and the nails of their hands and feet tinged with *Kna* (*Lawsonia*), which is imported from Constantinople, and is sometimes mixed with vitriol, to render the colour browner and more permanent; as it will thus continue about two months. But paint is rarely employed by young females.

Married women cut off their hair obliquely over their eyes, and leave two locks also cut transversely, hanging down their cheeks; they likewise bind a long narrow strip of cloth round the head, within the ends of which they confine the rest of the hair, and turn it up from behind, braiding it in two large tresses. Like the Persians, they dye their hair of a reddish brown with *Kna*. Their under garment is more open below, but in other respects similar to that of the unmarried, as are their upper dress and girdle. They paint their faces red with cochineal, or other drugs, and white with an oxyd of tin, called *Aklyk*, which they carefully prepare over a dung fire, in small earthen pipkins*. They also dye the white of the eye blue, with a finely pulverized preparation of copper (*Mafetash*) brought from Constantinople, and, by a

* In order to compose the fashionable greyish-white Tartar cosmetic, the women first heat a pot, covered with clay, in a strong dung fire, till it is glowing hot. The vessel, being thus prepared, is placed with the opening sideways in another dung fire, which they accumulate around it; then bars of tin are thrown in, and the opening is closed with an iron cover, till the metal is melted. Next, the lid is removed, and the tin is continually stirred with an iron spatula: when it is perfectly fused, they add some sheep's tallow, with a small piece of lead and cyprus-soap, which must be burnt on the tin till they disappear. The operator continues to stir the mass till the metal gradually becomes calcined, after which it is sifted and fold. This cosmetic imparts a pale white hue, nearly resembling the natural colour of the skin.

particular process *, change the colour of their eye-brows and hair to a shining black, which is retained for several months. At weddings, or on other solemn occasions, the wealthy farther ornament their faces with flowers of gold-leaf; colour their hands and feet, as far as the wrist and ankle, of an orange hue, with *kna*, and destroy all the hairs on the body with a mixture of orpiment and lime.

The women, both married and single, wear yellow half-boots or stockings of morocco leather (*Terluk*), or socks: for walking, they use red slippers with thick soles; and, in dirty weather, put on stilt-shoes, like the Circassian females. Abroad they wear a kind of undress gown (*Feredshé*) of a loose texture, manufactured by themselves of white wool, and called *Chirka*: next, they wrap several coloured Turkish or white cotton handkerchiefs round their head, which they tie under the chin, and over all this throw a white linen cloth, reaching half-way down the arms, drawing it over the face with the right hand; so that their black eyes alone are visible. Independently of this mummery, they evade as much as possible the company of men; and, when they accidentally meet a man in the streets, a false modesty enjoins the woman to avert her face, or turn towards the wall.

The nobility and the priesthood are highly respected among the Crimean Tartars: and, in former times, were often able to

* Twenty-five of the best galls (*Balamut*) are boiled in oil, then dried, and reduced to a fine powder; to which are added three drachms of green vitriol, one of cream of tartar, one of indigo, and a tea-cupful of *Kna*, or *Lawsonia alccanna*. The four first mentioned ingredients are well agitated with two pounds of water; and then the powder of *Kna* is gradually mixed with them so as to form a paste. With this composition, the hair is carefully anointed, so that the skin may not be blackened; and a kerchief is tied round it during the night. The next morning the hair is washed.

make a formidable resistance to the Khan, and even to effect his deposition. The Khan was always chosen from the family of the Ghireis: I am, however, by no means convinced, that they sprang from a direct descendant of Tshingis-Khan. From this family (of which there is no male branch now remaining in the Crimea, though there are several in the Turkish empire) were also uniformly chosen the Kalga-Sultan, and Nuraddin-Sultan, who are the persons next in rank to the Khan. The Tshoban-ghirei are the only descendants of a collateral branch of the Ghireis in Crim-Tartary; who, at the request made by one of the former Khans to the Sultan at Constantinople, were excluded from the right of succession, which was formerly granted to their own family.

The other ancient Noble Families are:

1. The Shirins, a numerous and powerful race, dwelling chiefly between Karaffubasar and Kertsh: they alone enjoy the privilege of marrying the daughters of the Ghireis, and thence bear that surname in several branches of their offspring. This family (which has frequently proved dangerous to the Khans by its opposition, and under the last Shahin-ghirei-Khan was considerably thinned) is nevertheless very numerous. It derives its rank from a certain Dangi Bey, who, in former times, during a general rebellion, in which almost the whole race of Ghirei was destroyed, had the loyalty to conceal and save a youth of that house: at length the nobles, being tired with anarchy, elected this young prince their Khan; who, in gratitude to the Shirins, granted them the privilege they now enjoy.

The

The oldest man of this family is always honoured with the title of *Shirin-Bey* *; and, during the first years after Russia had taken possession of the Crimea, the Imperial Court granted him a pension of two thousand rubles. The Shirins also had their *Kalga*, who was the next in age of that consanguinity. They are still considered as the most dangerous and turbulent nobles.

2. The *Barins*, or *Baruns* †; who resided in the environs of Karassubasar, but all of whom have now emigrated.
3. The *Mansurs*, who are still a numerous family at Koslof; and the oldest of whom also enjoys the title of Bey.
4. The *Sudshuwouts*, of whom there is only a youth remaining, and settled to the eastward of Karassubasar.
5. The *Ardins*, or *Arghins*; a tolerably numerous race; between Akmetshet and Karassubasar.
6. The *Yashláuvs*, once a very respectable family, and still flourishing at Bakhtshifarai; the oldest of whom also bears the title of Bey. Two of the sepulchral chapels at Eskiyourt are said to have been erected to the memory of the Yashláuv-Beys.
7. The *Dairs*, who have also their Bey, possess large estates in the district of Perekop, as well as between the Salgir and the Suya.

These seven ancient families never entered into the service of the Khans, pretending to a kind of political independence; nor did they ever take the field otherwise than voluntarily.

* Bey is a title almost equal to that of Prince; but which many sons of the nobility assume, without having any right to it.

† Probably from the Mongolian word *Baaron*, which signifies the right hand, and the right wing.

Their tenants, however, being considered as subjects, were liable to serve. The revenues of these nobles consisted of the tenths from their landed property; the herds and flocks depastured on them (*Ushuur*); the profits of their own husbandry and live stock, as well as the Charadesh, or tribute paid them by the Greeks, Armenians, and Jews. The other noble families are those of, 8. *Kiptshak*; 9. *Oirät*; 10. *Merkit*; 11. *Ablan*; 12. *Burultsha*; 13. *Bitak-Bulgak*; 14. *Subanghafi-oglu*; and 15. *Yedei-oglu*; the two last of which properly belong to the Nagays, and mostly dwell in the vicinity of Perekop; except a few of the race of *Subanghafi-oglu*, who reside in the neighbourhood of *Akmetshet*. Another class of nobles, or *Murfes*, comprehends the *Kapi-Chalki* (servants of the Porte), descended from those who have filled places of honour under the Khans, and living in a state of perpetual jealousy with the Shirins. The children of these placemen who had grants of estates from the Khans, sometimes for life, and sometimes in fee, inherited their nobility, but not always their wealth; for there are considerable numbers of poor *Murfes*, who are scarcely able to procure the necessaries of life, and are often compelled to accept of support from the common Tartars: between the old nobility and this class a continual mistrust prevails.

There is another class, called *Tshelebi*, which does not completely rank with the nobles, though it is distinguished from the plebeian Tartars, and esteemed as the descendants of the *Muftis*, and other dignified clergy. The superior Tartar priesthood consists of the *Mufti*, who now enjoys the rank of General, and a pension of two thousand rubles; the *Kafi-or*

Kadi-Esker Effendi, and five Ulemas, who form a kind of synod or consistory; have a small salary; and the oldest of whom, by a late regulation, succeeds to the office on the death of a Mufti. The inferior clergy include the Town-Kadis, who are subordinate to the Mufti, and the District or Village-Kadis, who are under the superintendance of the Kafi-Esker; also the Khadyps, who are appointed at the chief or parish metshets; and the common Imams: lastly, all persons conversant with written language, are called Mullahs; though not actually Imams. The officiating clergy in every metshet enjoy the glebe, *vakuf*, bequeathed by will; and which consists of garden, arable, and meadow land. The Kadis have a jurisdiction in all hereditary and matrimonial affairs, as well as in disputes relative to landed estates, and their sale. The Kafi-Esker is the superior judge, with whom certain taxes on lands, together with their conveyance, are registered in particular books, which serve as public documents.

It would be superfluous here to enlarge on the religious ceremonies, nuptial solemnities, and other customs of the Tartars; as in every other respect they agree with those of the Turkish Mahometans, so often described by travellers. Polygamy, however, rarely occurs even among the nobles and more wealthy inhabitants of towns; yet there are some persons in the villages, who incumber themselves with two wives. Male and female slaves are not common in that country: but the nobility support numerous idle attendants, and thus impoverish their estates; while their chief pride consists in rich and beautiful apparel for themselves and their wives; and in handsome equipages, to ride into town; being accompanied by
a train

a train of domestics, who follow them on every excursion, though the chief employment of the latter is that of giving their master his pipe, at his demand; standing in his presence, or assisting him to dress; and, in all other respects, living in the same indolent manner as their lords. Another source of expense is the purchase of elegant swords, and especially of excellent blades; the distinction between the different sorts of which, together with their names*, constitutes among the nobles a complete science. They are also great admirers of beautiful and costly tobacco-pipes, together with expensive mouth-pieces of milk-white amber, that are likewise used by the Turks, and of tubes of curious woods: but the *Kallian*, or the pride of the Persians is scarcely known here; and the Tartars only employ small ornamental bowls made of clay, which are almost every moment filled with fine-cut leaf-tobacco. The generality of these noble Lords, or Murfes, were so ignorant, that they could neither read nor write; and, instead of signing their names, they substituted an impression of their rings, on which a few Turkish words are engraven. Some of the young nobility, however, are beginning to study not only the Russian language, of which they perceive the necessity; but also apply themselves more sedulously to reading and writing, and thus become more civilized.—The expence of wearing apparel for the women shut up in their harems is, according to their manner and fortune, little inferior to that of

* The principal names of the blades, partly manufactured at Damascus and in Turkey, and partly of those made in Persia, are as follow: Ters-Maimun (in which the human face appears totally distorted, whence it derives its name, signifying a distorted ape); Kirk-Merduen, or forty steps; Chorassan, Sungur, Tavan, &c.

Europeans ; with this single difference, that the fashions among the former are not liable to change. Even the wives of the common Tartars are sometimes dressed in silks and stuffs, embroidered with gold, which are imported from Turkey. In consequence of such extravagance, and the extreme idleness of the labouring classes (who only exert themselves for procuring the necessary subsistence), there are very few wealthy individuals among the Tartars. Credulity and inactivity are the principal traits in the Tartar character. To sit with a pipe in their hands, frequently without smoking, for many hours on a shady bank, or on a hill, though totally devoid of all taste for the beauties of nature, and looking straight before them ; or, if at work, to make long pauses, and above all to do nothing, constitute their supreme enjoyments : for this mode of life, a foundation is probably laid by educating their boys in the harems. Hunting alone occasionally excites a temporary activity in the Murfes, who pursue their prey with the large species of greyhound, very common in the Crimea ; or with falcons and hawks.

The language and writing of the real Tartars differ little from those of the Turks ; and the dialect of the mountaineers, who are subject to the Turkish dominion, bears a still greater analogy to that of their masters : on the contrary, the tongue of the Nagays deviates more remarkably ; as they have retained numerous Mongolian phrases, and make use of an ancient mode of writing, likewise mixed with the latter, and called Shagaltai. It is worthy of notice, that, in consequence of their long and intimate connection with the Genoese, many words of that language have been incorporated with the

Tartar tongue, especially at Kaffa ; while the Genoese have admitted into their dialect some Tartar and Greek expressions ; as may be seen from the following examples :

GENOESE.	TARTAR.	
<i>Caimacco, cocumacco.</i>	<i>Kaimak.</i>	Clotted Cream.
<i>Cardascia.</i>	<i>Kardasch.</i>	Brother, bosom-friend.
<i>Corbetta.</i>	<i>Korbet.</i>	The arm.
<i>Macrami.</i>	<i>Macramé.</i>	A towel.
<i>Buzarà.</i>	<i>Buzarar.</i>	To injure.
<i>Ramadan.</i>	<i>Ramazan.</i>	A great noise.
<i>Cifutti.</i>	<i>Dshifut.</i>	Jews, a name of reproach at Genoa ; because they are despised in that city.
<i>Camallo.</i>	<i>Chamall, in the Turkish tongue</i>	A porter.
	<i>Camalè.</i>	
<i>Lesto.</i>	<i>Alest.</i>	Expeditious, nimble.
<i>Hiffa.</i>	<i>Hiffà.</i>	To make powerful efforts.
<i>Tassa.</i>	<i>Tas.</i>	A cup.
<i>Mangià.</i>	<i>Mangià.</i>	To eat.
<i>Barba.</i>	<i>Barba.</i>	Uncle.
<i>Lalla.</i>	<i>Lalla.</i>	Aunt.
<i>Carega.</i>	<i>Caregla.</i>	A chair.
<i>Mandillo.</i>	<i>Mandil.</i>	A handkerchief.
<i>Marmaggia.</i>	<i>Marmalia.</i>	The rabble.
<i>Savun.</i>	<i>Sabun.</i>	Soap.
<i>Catran.</i>	<i>Katran.</i>	Tar.

Barbé.

GENOESE.	TARTAR.	
<i>Barbé.</i>	<i>Berber.</i>	A barber.
<i>Sciorbi.</i>	<i>Sciorba.</i>	To sip.
<i>Eté.</i>	<i>Atà.</i>	Age.
<i>Tatta.</i>	<i>Tatta.</i>	Nurse's husband.
<i>Matto.</i>	<i>Mattu.</i>	A fool.
<i>Camera.</i>	<i>Camera.</i>	A chamber.
<i>Galabà.</i>	<i>Kalabalik.</i>	Uproar, commotion.
<i>à Giabba.</i>	<i>Dshabba.</i>	To act the parasite.
<i>Afion.</i>	<i>Afiún.</i>	Opium.
<i>Fortunna.</i>	<i>Fortundà.</i>	A sea-storm.
<i>Timon.</i>	<i>Timon.</i>	Cummin.
<i>Orza.</i>	} <i>Orsa.</i>	} Tow, or oakum.
<i>Appoggia.</i>		
<i>Ciaffio.</i>	<i>Ciaffer.</i>	A heretic, faithless.
<i>Giaccami.</i>	} <i>Giattar.</i>	} Lying, fitting.
<i>Giaccato.</i>		
<i>Tappo.</i>	<i>Tappa.</i>	A cork.
<i>Sappa.</i>	<i>Tschappa.</i>	A hoe.
<i>Fand.</i>	<i>Fenner.</i>	A light-house.
<i>Cieuve.</i>	<i>Dshyava.</i>	It rains.
<i>Bari.</i>	<i>Baril.</i>	A small cask, or barrel.

Several Greek words have also been incorporated with the Genoese language, and a still greater number with that of the Tartars, in which some traces of the Mongolian may be clearly distinguished; but not the smallest vestiges of the Gothic are perceptible in the different Tartar dialects: and the narrative of *BUSBEK*, relative to a remnant of the ancient Goths existing among

among the Crim-Tartars, could only have arisen from the circumstance of some German, Swedish, and Livonian captives having been found in the Crimea. In like manner, Lefguis, Persians, and Georgians may at present be discovered in that country. Thus also Germans, and natives of other regions, were among the late Kozaks of Saporogi, though without ever being considered as remnants of those nations: nor is there throughout Crim-Tartary a single name of a river, valley, mountain, or place, in which any Gothic word can be traced; whereas many Greek names are still extant.

The food of the Crimean Tartars is rather artificial for so unpolished a nation. When the higher classes give entertainments, numerous simple and made dishes are set out, beside a desert of fruit. Among the most esteemed delicacies are, forced-meat-balls wrapped in green vine or sorrel-leaves *, and called *Sarma*; various fruits, as cucumbers, quinces, or apples, filled with minced meat, *Dolma*; stuffed cucumbers; dishes of melons, *Badilshan*, and *Hibiscus esculentus*, or *Bamia*, prepared in various ways with spices or saffron; all of which are served up with rice; also *Pelaw*, or rice, boiled in meat-broth, till it becomes dry; fat mutton and lamb, both boiled and roasted, &c. Colt's flesh is likewise considered as a dainty; but horse-flesh is more commonly eaten by the Nagays, who are still attached to their ancient custom. The Tartars rarely kill horned cattle: mutton and goat's flesh constitute the food of the common people, especially in the country, together

* A dish of vegetables, much used in the Crimea, is made with the large-leaved sorrel, or *Aat-Kulak*, which is the Patience Dock, or *Rumex Patientia*; and also with the acetous garden sorrel, that occasionally grows on the mountains.

with

with preparations of milk and eggs ; butter (which they churn and preserve in the dry stomachs of oxen) ; a kind of pelaw, made either of dried or bruised unripe wheat, and which they call *Bulgur* ; and, lastly, their bread is generally composed of mixed grain *. Their ordinary beverage is made by triturating and dissolving cheese in water ; the former of which is called *Yasma*, being prepared from coagulated milk, or *Yugurt* ; but the fashionable intoxicating drink is an ill-tasted and very strong beer, or *Busà*, brewed of ground millet. Many persons also drink a spirituous liquor, *Arraki*, which the Tartar mountaineers distil from various kinds of fruit, particularly plums. It is also extracted from sloes, dog-berries, elder-berries, and wild grapes, but never from the common cherry. They likewise boil the expressed juice of apples and pears into a kind of marmalade, *Bekmefs*, of the consistence of a syrup, or that of grapes into *Nardenk*, as it is called ; the latter preparation is a favourite delicacy, and eagerly purchased by the Tartars of the Steppes : hence great quantities of it are imported in deal casks from Anatolia, at a very cheap rate, for the purpose of converting it into brandy.

In consequence of their temperate, simple, and careless mode of living ; the warm clothing which they wear throughout the summer ; and the little fatigue they undergo, the Tartars are subject to few diseases ; and are in general exempt from the severe intermittent and bilious remittent fevers, which commonly attack and prove fatal to foreigners and new settlers in

* *Tshavdar* is the name given by the Tartars to a mixture of rye and wheat ; and *Tshalmalyk* is a compound of rye and barley, and occasionally also of wheat ; which kinds of grain they sow in a mixed state.

the Crimea. Many natives arrive at a vigorous old age ; nor do any disorders prevail among them, except the itch arising from sloth or infection, and rheumatic complaints : the latter may be attributed to their apartments being too much exposed to the current of air, having wooden lattices instead of windows, and large open chimnies. The chambers of the opulent are furnished with elevated divans ; but those of the common people are supplied with matrasses and cushions, stuffed with cotton ; and which are disposed on the floor around the room, close to the walls : they are used both as seats and couches, and are infested with fleas, bugs, and other vermin. The true leprosy, which the Ural-Kozaks term the Crimean Disease, never occurs in Crim-Tartary.

II.

ON THE PRESENT STATE OF THE CRIMEA, AND THE
ECONOMICAL IMPROVEMENTS OF WHICH IT IS SUS-
CEPTIBLE.

From its geographical situation, climate, and soil, the peninsula of the Crimea is the only region of the Russian empire, in which all the products of Italy and Greece, that are not cultivated in the northern provinces, might be introduced and multiplied ; as several of them are already indigenous.

The culture of the vine, of silk, sesame, olive, and cotton, as well as of madder, bastard-saffron, and other dyeing drugs, which are at present imported from the Baltic, Caspian, and

Black Seas, at a heavy expence, and with constant disadvantage to the balance of trade, might be encouraged, partly in this peninsula, partly on the banks of the Kuma and Terek; and would in time become sufficiently productive to supply the consumption of the empire, if those districts were peopled with a proper number of industrious settlers from Italy, Dalmatia, Persia, Georgia, or Armenia. As the empire now enjoys the blessings of peace, with tolerable security on the Asiatic side, manufactories of good woollen cloth might also be established, were the breed of sheep already existing here, especially on the mountains, improved by crossing with Spanish or Bulgarian rams. Farther, if Government would permit merchandize to pass through the Russian territory, on paying a transit duty, a very advantageous traffic might be carried on with Anatolia and Constantinople; as, during the present general * warfare, the maritime trade with Smyrna is entirely suspended; and the manufactures of Europe and America are partly procured over land from Vienna, at a greater charge than they could possibly be furnished at home.

Independently of the deficient population in general, as well as of the want of substantial expert merchants, and industrious inhabitants, the greatest obstacle to the prosperity of the Crimea arises from the circumstance, that the most beautiful mountain-tracts are chiefly occupied by villages, too small in proportion to the extent of these lands, and inhabited by slothful Tartars; whose rural economy exhibits a passion for devastation peculiar to that people. Constantly disaffected towards a

* The reader will recollect, that these remarks were written in, or before, the year 1800.—*Transl.*

Christian government, they never cultivate more than is indispensably necessary for their food and clothing; placing their supreme happiness in indolent repose. The women and children, who might be made useful in the culture of silk, sit absolutely inactive in their harems, and appear to be expressly trained to an idle life. They do not bestow the least attention on new objects of culture, or on clearing fresh plots of land; and scarcely do these inhabitants of the beautiful vallies keep in order, for their own enjoyment or profit, the gardens originally planted by the Greeks. The woods, with which Nature has clothed their mountains, they most wantonly destroy: in order to construct miserable carriages, the finest trees fall beneath the axe, though they generally employ but a small part of the timber. For the naves of wheels, they fell the strongest elms and ash-trees, of which the solid root only is used; the most beautiful young oaks and beeches are cut down for spokes, axle-trees, and fire-wood; and the full grown trees for fellies. The wheels, however, when completed and brought to market, are so wretchedly manufactured, that they frequently fall to pieces within a month after they have been purchased. Every winter the Tartars burn, for their convenience, the fences of their fields and gardens; to replace which, the young shoots and coppices are unmercifully cut in the spring; while the windfalls, and wood uselessly felled, lie rotting in the forests. This waste of young timber, the sale of which affords their chief maintenance, together with their numerous herds of goats, destroys all the young forests; so that large tracts of land, which were formerly covered with lofty trees, are now overgrown with useless bushes and underwood.

Another circumstance, that will impede the future prosperity of the Crimea, is the dividing and apportioning of the best crown-lands (since the Russians took possession of the country) to proprietors who are either absentees, disinclined to make new plantations and improvements; or, not having capitals adequate to such enterprizes, are content with the trifling produce of the hay, wood, or tenths of the corn and sheep. Thus, in the year 1796, the fine vallies on the southern coast, which had, by a standing order, been hitherto reserved for settling foreign colonists, were distributed among unworthy proprietors of a similar description; whereas they might have been rendered useful to the empire, by more economical arrangements.

Lastly, one of the greatest impediments to the prosperity of this peninsula, consists in the uncertainty and insecurity of landed property; in consequence of which those proprietors, who have the power and inclination to embark in speculations for the public good, have hitherto been deterred from carrying their designs into effect. For instance, since the Crimea has been in the possession of Russia, the lands that fell to the crown either as demesnes of the Khans, or by confiscation (including whole districts), were granted as hereditary property, without specifying whether such districts belonged to the proprietors with all their rents and profits, in the same manner as the farmed estates in Livonia; or, whether the Tartar inhabitants were to be considered as entirely independent on the landowners.— If we revert to ancient times, when the Tartar hordes invaded the Crimea, the conquerors seem to have exercised a complete feudal dominion over the old inhabitants. The lands

were distributed among the different chieftains ; and the common soldiers were mostly considered as farmers and tenants. About two hundred and eighty years since, under the reign of an ancient Shahin-ghirei Khan, regular limits were settled for the villages and occupiers of land in the plains, and proper documents were made out for those who were entitled to such grants. When the Turks assisted Sultan Mahomet II. to conquer the fortrefs held by the Genoese, and expelled the latter from the Crimea, the former retained possession of the whole mountainous tract on the southern coast to the banks of the Belbek ; and towards the East, as far as the dominion of the Genoese extended, together with the fortified towns of Balaklava, Kaffa, Kertsh, Yenikalé, Arabat, and Perekop ; while the Tartars, who established themselves there, were obliged to pay a fixed rent, or *Ushur*, of a tenth and other assessments, which were collected by Nafirs, and appropriated to the maintenance of the Janissaries. Formerly, on the recommendation of the Khan, Murfes of distinguished merit obtained from the Sultan grants for certain districts, to be enjoyed only during life, as a reward for their services ; by which tenure they received the tenths for their own emolument, and paid only a trifling quit-rent into the Turkish treasury. But, as the Crimea, at the peace of Kutshuk-Kainardshee, was entirely exonerated from its dependency on the Ottoman empire, this territory on the southern coast, together with all the revenues thence arising, reverted as a feigniorial domain to the last Shahin-ghirei Khan, who farmed out the rents ; as appears by a Firman still extant, and of which the following is a literal translation :

“ By

“ By this Our Firman, be it known to all the Mahometan and other inhabitants of the undermentioned towns and villages ; that we have let to farm, and assigned over, to the Director of our Mint, Abdul-Hamid-Aga, and to his coadjutors Hadfhi-Mekhmed, Mulla-Omer, and Mulla-Refful, the rents (*Ushur*, that is the eighth part) belonging to us, and other revenues from whom or whatsoever they may be due ; namely, from all crops of corn or garden-fruit, kitchen-gardens, including bee-hives and flax-fields, the said *Ushur*, or eighth part, fixed by law ; also for every sheep, two paras in money ; and, for every head of horned cattle, not belonging to Mahometans, six paras. With regard to the rent of land, we command all persons, without exception, to pay for every arable acre of ground, that can be ploughed in one day, three hundred and forty akshas, computing one hundred and eighty to a *Gruush**. Whosoever shall act contrary to this order, which has for many years been obeyed, pursuant to the Mahometan regulations, shall be punished without mercy, according to law. At the same time, we most earnestly command the farmers of this branch of the revenue to collect these dues without fraud, and to keep a register for entering the number of acres and the amount of the revenue in each town and village ; distinguishing particularly what is paid by Mahometans from that contributed by others, and likewise stating the extent of the land possessed by each ; such accounts to be finally delivered to our Treasury.”

* *Gruush* is the name for the Turkish piafter.

A TABLE, shewing the Names of those Towns and Villages, which formerly belonged to the Turkish Sultan, but are at present let to farm.

I. In the *Kadilik*, or Jurisdiction, of Mankup.

The town of Mankup.

The following villages :

- | | |
|--------------------|-----------------------|
| 1. Beeyouk Lambat. | 22. Müfhatka. |
| 2. Kutshuk Lambat. | 23. Phurus. |
| 3. Degirmen-Koi. | 24. Gaitu. |
| 4. Bartinit. | 25. Laspa. |
| 5. Keefiltash. | 26. Kutshuk-Muskumya. |
| 6. Gaspoora. | 27. Varnutka. |
| 7. Yourfuf. | 28. Baidar. |
| 8. Makhura. | 29. Sakhtik. |
| 9. Alupka. | 30. Kalendee. |
| 10. Simeis. | 31. Iskelé. |
| 11. Nikita. | 32. Savatka. |
| 12. Gurüs. | 33. Ufundhi. |
| 13. Magaratsh. | 34. Bagé. |
| 14. Dere-Koi. | 35. Urkyoufta. |
| 15. Avutka. | 36. Booyouk-Muskumya. |
| 16. Yalta. | 37. Aye-Thodor. |
| 17. Leemana. | 38. Oufen-Bashtshik. |
| 18. Keekeneis. | 39. Shülü. |
| 19. Marfanda. | 40. Upu. |
| 20. Kutshuk-Koi. | 41. Kutshka. |
| 21. Mükhalatka. | 42. Marmara. |
| | 43. Thor- |

- | | |
|-----------------------|------------------------|
| 43. Tshorguna. | 59. Kotsha Sala. |
| 44. Elffu. | 60. Adym-Tshokrak. |
| 45. Kmara. | 61. Karly. |
| 46. Krailee. | 62. Fetsh-Sala. |
| 47. Balyklava. | 63. Yenee-Sala. |
| 48. Kadi-Koi. | 64. Yantshu. |
| 49. Kok-Agatsh. | 65. Airü-Kül. |
| 50. Ak-Yar. | 66. Kokolos. |
| 51. Inkerman. | 67. Markür. |
| 52. Tsherkefs-Kerman. | 68. Kok-Kyos. |
| 53. Kamüshli. | 69. Gavree. |
| 54. Utsch-Kuyou. | 70. Makhaldur. |
| 55. Belbek. | 71. Tatar Ofman. |
| 56. Kabarta. | 72. Bgaty. |
| 57. Otar. | 73. Booyouk-Oufenbach. |
| 58. Kara-Ilas. | 74. Kutshuk-Oufenbafh. |

The following sixteen villages, together with the Jew's Town, were subsequently added to the Kadilik of Mankup by Shahin-ghirei Khan.

- | | |
|------------------|------------------------|
| 1. Iftilä. | 10. Ulakly. |
| 2. Kuvush. | 11. Mengush. |
| 3. Avtshee-Koi. | 12. Besh Oevö. |
| 4. Ulu-Sala. | 13. Booyouk-Yenee-Koi. |
| 5. Baga-Sala. | 14. Kutshuk-Yenee-Koi. |
| 6. Matfhee-Sala. | 15. Ayan. |
| 7. Kermentshik. | 16. Mairum. |
| 8. Laka. | 17. Dshüfat Kalé. |
| 9. Shurü. | |

II. In the Kadilik of Sudak.

The town of Sudak.

The following villages :

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|----------------------|----------------|
| 75. Alushta. | 85. Arpat. |
| 76. Shuma. | 86. Shelen. |
| 77. Kürpek. | 87. Varun. |
| 78. Demirdshi. | 88. Ayeeferes. |
| 79. Oulu-Ousehen. | 89. Kutlaks. |
| 80. Kuru-Ousehen. | 90. Tokluk. |
| 81. Kutshuk-Ousehen. | 91. Koos. |
| 82. Tuvak. | 92. Taraktash. |
| 83. Uskut. | 93. Sovuk-Su. |
| 84. Kapfokkor. | |

III. In the Kadilik of Kaffa.

The villages of

- | | |
|--------------------|----------------------|
| 94. Sary-giol, and | 95. Seigmen-Dshaila. |
|--------------------|----------------------|

Although, in this part of the Crimea, the use and possession of their gardens, fields, and meadow lands, were secured to the Tartars, so that they had a right to sell and bequeath them ; yet the established taxes were always to be paid ; and the ground rent, with which they were charged, independently of tenths, proves that they enjoyed the *usufruct* only, and not the property, of the lands.

The Murfes, however, as well as some of the common Tartars, especially those inhabiting the plains, were invested with the landed property, acquired either by grant or purchase

from the ancient Khans, which they could freely sell, and which was not subject to any assessment; but, as the Russian law permits no commoner to hold landed estates, doubts frequently arose, whether such possessions, belonging to the common Tartars, could be sold or inherited by will. With regard to the application made on this subject by the Tartar courts in 1794, a decision was given by an Ukase of the Russian Senate, dated on the 19th of October in the same year, enacting that commoners, who had a right to hold lands in the Crimea, might thenceforward occupy and inherit them, but could dispose of them only to nobles. From this law, the simple yet avaricious Tartars, at the suggestions of those who live by the litigations of others, drew the false inference, that all land on which a village stood belonged in fee to the occupiers; and, as the inhabitants of some villages were beginning to sell their estates, and attempted to settle on vacant crown-lands, it was ordered that no plebeian Tartar should dispose of them, without proof of his title and permission from the deputed authority; at the same time enjoining, that no persons should remove from the places in which they were registered to any other village.

Farther, all landed property in the Crimea belonged either to the Murfes, or to such of the Tartar commonalty as could produce a deed of sale, a grant (*Kodshet* and *Firman*), or a certificate of inheritance, *Yusta*, from the Kafi-Esker, or Cadi; or, it was a common pasture, *Merra*, possessed by the whole village; or it was a feigniorial domain of the Khan, *Mira*; or belonged to the Kalga-Sultan, *Kalgalyk*; or to the Nuraddin; or to the Shirin-bey; or, it was property which had fallen to
the

the metshets by donation and inheritance, termed *Vakuf*; or, lastly, it was a demefne of the Turkish Sultan, to whom it paid a ground-rent.

Notwithstanding these well-known privileges, many clerks and interpreters (being discharged from offices in chancery by the abolition of the provincial government, which had existed in Crim-Tartary since its subjection in 1796) were induced, through the hope of maintaining and enriching themselves by law-suits, to persuade the Tartars, that they had a legal claim on all the common lands granted by the Crown; that they were under no obligation to pay any assessments to the proprietors; and that they were in lawful possession of the whole district belonging to their villages. Hence arose a great number of expensive suits, and all landed property at once lost its value; because every land-owner was thus deprived of the tenths and manorial services he had hitherto received, and relinquished all farther improvements. This state of affairs still continues; yet it may be hoped that the commission instituted by order of the Court, under the presidency of so upright, acute, and resolute a military governor as General MICHELSON, will speedily terminate such abuses, and restore every person to the peaceable enjoyment of his rights.

The chief difficulty in these law-suits, and which formerly gave birth to innumerable evils, arose from the implicit credit given in the courts, and in surveying land (since the Crimea has been in the possession of Russia), to the parole evidence of the Tartars, when written documents could not be produced. This evidence was given upon a slight oath, sworn on the Koran in a metshet; and it has been proved in various in-

stances, by the confession of several Tartars, and even of priests, that the Mahometan clergy had secretly instructed the common people of their religion, that such oath was not binding, when it concerned a *Gyowr*, or infidel; and might therefore be violated with impunity, according to prevailing circumstances. The people had also been taught various evasions, by which they entirely abstracted and disjoined in their minds the act of kissing the Koran, at the conclusion of the oath, from the oath itself. But a more solemn form of swearing, termed *Dallak*, is at present, on important occasions, adopted even in Turkey, by which the person taking such oath binds himself, in case of perjury, to renounce his wife; so that a Tartar, who has any conjugal affection, will not easily forswear himself, as the marriage is thus instantly dissolved. The introduction of this form was, for a long time, strenuously opposed by the present Mufti, under various pretexts, till at length it was established by the active intervention of the worthy military Governor above named. But even the *Dallak* has, in many instances, been violated; and the Mahometan priesthood have apparently supplied the common people with salvoes, or dispensations: it would therefore, perhaps, be more advisable (in causes relating to the demesnes of the Crown, or the property of private individuals) to admit only written evidence. The priests, however, have lately begun to fabricate such proofs for the advantage of the Muses, though the forgery has sometimes been detected.

The solemn oath last alluded to, deserves particular notice; because it is connected with the singular laws of the Ma-

hometans respecting divorces. Its tenor, according to a literal translation, is as follows :

“ I believe in the unity of God, and in his angels, as also in the four holy books, Intshil, Tevrat, Sebur, and Koran *, which God has given us by his messengers from heaven ; likewise in predestination, namely, that whatever happens on earth, is written in heaven ; and, farther, in the resurrection of the dead, in the assurance of which I say,

“ There is only one God, and Mahomet is His Prophet !

“ There is only one God, and Mahomet is His Prophet !

“ There is only one God, and Mahomet is His Prophet !

“ We Musselmen, true believers in the four holy books that are sent down from heaven, of which we have no doubt, and upon which we swear, attest by our signature at the foot hereof, that, in conformity to our oath, we will speak the simple truth in answer to all questions which shall be proposed unto us concerning the lands and boundaries in dispute, and that we will pronounce no falsehood ; that no secret motive shall induce us to say any thing that is untrue, or to conceal any circumstance through the fear of injuring any individual, through respect of persons, friendship, consanguinity, or interest. We will therefore declare upon our oath and conscience, to whom the land in question formerly belonged ; whether it has been sold, and to whom ; and whether the present occupiers hold it by right or otherwise. Should we, in the least degree, say what is false on these points, may we fall under the displeasure of our Emperor, according to our deserts ;

* These books are the Old Testament, the New Testament, the Psalms of David, and the Koran.

at the day of judgment, may the curse and condemnation of our Prophet Mahomet be our portion, as false witnesses, and perjurers; and may we suffer all the torments reserved for those who have proved unfaithful to the laws of their country. In addition to all this, we farther declare, that, in case of perjury, our lawful wives shall be separated from us for three (or nine) *Dallaks**. In confirmation of all which we kiss the holy Koran from the bottom of our hearts and souls. Amen! Amen! Amen!

For the illustration of this last clause, it must be observed, that the Mahometans have two kinds or degrees of divorces: the first is a mere separation, such as frequently takes place among married people, when the husband in anger utters to his wife the words, *Boshol bendenn*, signifying, “Be free from me.” In this case, the wife must immediately conceal herself, and never be seen in her husband’s presence without her veil; or, she must quit the house, and return to her parents. In general, the husband again receives her, when his anger subsides; and, at length, an Imam or a Mullah is called in, and the *Nikiakh*, or marriage-contract, is renewed in his presence; on which occasion the Mullah repeats a short prayer, as is usual at all regular nuptials. The *Nikiakh* is a written promise, by virtue of which the husband enters into an engagement with his wife, that, in case of separation or of his decease, he will direct a certain sum of money to be paid in

* From all the information I could obtain, *Dallak*, in the Tartar tongue, denotes the spleen of a slaughtered animal. But I could not learn how this word became so important in regard to divorces. In the Arabic language, *Dalach* signifies the untying of a knot.

addition to her dower. After this ceremony, the husband may again cohabit with his wife.

The other kind of divorce is attended with still greater difficulty, when the husband is absolved from his wife, either in consequence of the above mentioned false oath, or, through rage, uttering the words *Boshol bendenn ütsh Dallak*. In this case, should he afterwards wish his wife to return, the parties must wait three full months, in order to ascertain that she is not pregnant. At the expiration of such term, she must be united to, and sleep with, another man, who has the option of keeping her, or sending her back the next day, on paying the promised *Nikiakh*; after which she must wait three additional months, before she can return to her former husband, who is obliged to renew the marriage contract. It is by these formalities, that the above-mentioned oath is rendered so solemn and important. The Mahometan law requires every widow, or divorced wife, of that religion, to abstain from marrying again during three months; and, to prevent all fraud or evasion, the Mufti has ordered, that this period be computed from the day of the husband's decease, or of the separation.

The law of Mahomet, however, permits Musselmen to marry four wives, and if a man wishes for a fifth, he must previously divorce one of the others; but he may cohabit with all his female slaves without marrying them. In such case, they are called *Odahk*, or companions, not *Nikioly*, or wives. All the children of female slaves have a right to inherit the property of their father, as well as those born in wedlock.

III.

ON THE STATE OF ECONOMY AND AGRICULTURE IN CRIM-TARTARY, TOGETHER WITH AN ACCOUNT OF THOSE VEGETABLE PRODUCTIONS WHICH ARE USED FOR FOOD.

Before I enter on a particular description of Tartar economy, it will be necessary to premise a few words, respecting the climate and nature of the soil in that peninsula.

It is a common remark of the Tartars that, since the Russians took possession of their country, the winters in Taurida have become more severe, and of longer duration. This opinion probably originated from the hard winters which happened soon after the political event just alluded to; and among which that of 1786-7 was particularly long and rigorous. But it may also be true, that the destruction of the hedges, gardens, and woods, along the banks of the brooks and in the vallies, partly by the numerous armies, and partly by the Tartars themselves, has afforded a free access to the cold East and North-east winds; and that both on this account, and in consequence of the decay of agriculture, as well as of the diminished number of fires occasioned by the emigration of the Tartars *, the climate has actually become colder.

The seasons in this country are, upon the whole, very unequal. I have known a winter, that of 1795-6, when, so

*: In large, exposed cities, for instance, St. Petersburg, the thermometer always stands, in winter, two degrees lower in the northern parts of the town, where the north wind enters with all its force, than in the southern quarter, where that wind passes over the houses. It is likewise colder on the broad quays of the Neva, than in the more confined streets bordering on its banks.

early as the 6th of February, all the spring-flowers were every where seen in full bloom, such as the *Viola odorata*, *Tussilago*, *Crocus*, *Colchicum vernum*, *Hyacinthus racemofus*, several kinds of *Ornithogalum*, *Cyclamen*, *Arabis alpina*, and *Fumaria*. During the remainder of that month, they were buried under a deep snow, though not a single day was marked by severe frost. On the other hand, the rigorous winters of 1798-9, and of 1799-1800, continued from the end of October till April, with various degrees of cold, accompanied by violent hurricanes from the North, so as frequently to cause the mercury to sink eighteen degrees below the freezing point; which was likewise the lowest state of the barometer in 1787. In the last of these winters, the frost was so intense, during the most boisterous North winds, that not only the whole Sea of Azof, together with the Bosphorus, but also great part of the bay of Kaffa, and several creeks of the Black Sea, were covered with ice, sufficiently strong to support the weight of persons crossing both on foot and on horseback. Such inclement winters, as well as copious falls of snow, are not very common; and the latter seldom remains on the ground throughout that season. The winds are very variable, and bring rain from the West and South-west; mild air and frequently mists from the South; serene dry weather from the East; and cold from the North. Besides, the barometer is subject to sudden changes, and the climate is so unsettled, that it often varies six or eight times in twenty-four hours. Fine weather, however, and heavy storms, which last are but too common, generally follow or precede the changes of the moon.

The summers in the Crimea are also very irregular. Too frequently droughts prevail for several successive years, even from the beginning of spring; so that the wells and brooks are dried up; and it is no uncommon circumstance to see the thermometer stand, in the shade, at twenty-nine, thirty, or even thirty-one degrees of Reaumur. On the same day, however, it often falls ten or twelve degrees, and there is generally a current of air, which moderates the heat, especially in the mountainous vallies, that are exposed towards the sea, and along the banks of rivers. Here a gentle breeze commonly blows from the sea, after ten o'clock in the forenoon, till the approach of evening, when it ceases; and, after sunset, a cool wind from the mountains prevails until morning, so that the nights are mostly cold, and the winds piercing. Cool and rainy summers are uncommon; though they occasionally happen after severe winters; when, on the one hand, the snow remaining long upon the Alpine heights, and, on the other, the drifted ice of the Sea of Azof, produce a cold atmosphere till the end of May, and cause a constant current of cool air. Such was the case in 1799, when the snow lay on the Alpine flats, or Yailas, till the month of May: the latter part, however, of that summer, was dry and very hot, whereas the same season in 1800 was remarkably rainy. In ordinary summers, the barometer seldom varies, and the inhabitants may generally expect fine clear days:—thunder-storms rarely occur; and are attracted by the high mountains; but are tremendous where they happen, and are not unfrequently accompanied by hail-stones and destructive water-spouts. These tempests, nevertheless, speedily subside; as in the summer and spring, the
rainy

rainy weather seldom continues longer than twelve or twenty-four hours.

No season of the year is more salubrious, or more pleasant in the Crimea, than the spring, which generally continues from March till the end of May. For, at that time, not only are the senses gratified with the sweetest perfumes wafted from the gardens and woods along the banks of rivers; the last of which exhibit an infinite variety of wild-fruit trees, white and red roses, water-elder, *Lantana*, wild vines, *Vitalba*, and jasmine, interspersed; but likewise each hill and declivity, around the champaign country, is alternately diversified with the beautiful colours of the flowers that every where clothe the earth; and sometimes one, sometimes another species, prevailing on different hills, according to their situation, aspect, or soil, vary and enrich the scene. Thus, at a distance, whole sides of mountains, and extensive tracts, covered with red or blue, purple or yellow tints, relieved by a back-ground of shaded green-sward, delight the eye with the most fascinating prospects. The fragrance arising from this profusion of flowers, especially March-violets, and the blossoms of trees, together with the grateful odours of the aromatic herbs, embalm the surrounding atmosphere.

The weather is generally settled; the heat is moderate and refreshing; the nights are cool and serene: numerous flocks of sheep are seen moving in every direction; together with village flocks scattered over the pastures: in short, it is impossible to behold a more delightful country than Crim-Tartary, throughout the vernal season. Few summers however pass, in which the verdure on the hills is not parched up; till, at length, the autumnal rains cause the herbage again to

vegetate for winter-pasture. Farther, the spring is usually unattended with rain, especially during the prevalence of violent and drying east-winds; and, unless a considerable fall of rain happens in April and May, an unproductive harvest but too frequently follows.

The most unhealthy season in the Crimea is the autumn, when bilious fevers prevail to a great extent: they are sometimes intermittent, sometimes remittent, and often prove fatal; or, if improperly treated by inattention to diet, the patient is subject to relapses, and the febrile attacks terminate in chronic disorders. These maladies must be attributed chiefly to the superabundance of bile, secreted during the hot season, as well as to the cold nights and piercing winds, which commence in July, and to the almost inevitable effect of cold on the body, after hot days. With the exception of such fevers, and of the itch (so common among the lazy Tartars), this country might be considered as one of the most salubrious in the world. The autumns vary greatly from each other with regard to rain and dew; the latter of which is extremely rare in summer: these seasons, however, so far nearly agree, that several cold days occur in the middle of October, sometimes so early as September, and are generally accompanied with night-frosts: rime, or snow, also appears on the high mountains, and sometimes proves injurious to the vintage; but, afterwards, the weather again becomes pleasant, and frequently continues mild till December and January.

The Tartars divide the seasons somewhat differently from the mode commonly adopted. Their spring, or *Bahaar*, commences with the *Kedreles*, or Saint George's day, 23d of April

O. S. (which is a solemn festival among the Greeks,) and continues sixty days, till the 22d of June. At the expiration of that time begins their *Tshilla*, or great summer, which terminates on the first of August, being a period of forty days. The month of August, till the 25th, is in their dialect termed *Agostos*, and is not included in any of the seasons. Their autumn, or *Ghus*, extends from the 26th day of the same month to the 26th of October, comprehending sixty-one days. This day is the other grand festival of the Greeks, called also *Kedreles*, and sacred to St. Demetrius; and, the harvest being then concluded, the fruits collected, and the vintage completed, the payment of all rents and debts is usually stipulated to be made from and after the 26th of October. The succeeding thirty-six days are termed the *fore-winter*; and the next sixty-five days, from the 1st of December till the 4th of February, constitute the principal winter, or *Kysh-Tshilla*. The remaining twenty-five days of the latter month are called *Gudshuk-ai*; and the fifty-three days, from the 1st of March to the 23d of April, or *Kedreles*, likewise form no part of any season, but are distinguished by the name of *Mart*. In this interval, according to the meteorological observations of the Tartars, which I have on the whole found tolerably accurate, there occur three cold periods, which they call the winter of old women; the starling's winter, or *Berdül-adshür*, continuing seven or eight days; and, lastly, the *Oepöpö*, or Hoopoe's winter.

It is remarkable that the Tartars retain the Mongolian* æra of twelve years, and give each of the twelve nearly the

* See Part II. of my "*Collections relative to the Mongolian Tribes*," published in the German language.

same names ; some of which are translated into their language, while others are totally misunderstood. The Tartar names of such years are as follow :

Sitshan signifying in both languages a mouse.

Sfeehir, a cow ; the *Ukir* of the Mongoles.

Barts, which in the latter tongue denotes a tiger, the Tartars derive from a small grey insect, not exceeding the size of a grain of wheat ; and which is found beneath stones.

Towshan, a hare ; the *Tushkon* of the Mongoles.

Ulu, (in the Mongolian language *Lu*, a dragon,) the Tartars appropriate to a small insect ; with which, however, they are unacquainted.

Ilan, a serpent ; the *Mogoi* of the Mongolians.

Yeelkö, a stud ; in the dialect of the latter *Morin*, a horse.

Koyun, a sheep ; the *Khoin* of the Mongoles.

Metshin, the Mongolian expression for an ape, is by the Tartars considered as being the red and black insect, or bug, which is seen creeping on walls.

Touk, a hen ; the *Takia* of the Mongoles.

Köpek, a dog ; in the Mongolian dialect *Nokhoi*.

Khynfir, a hog, in the same language *Gakhai*.

This æra, which recommenced in 1792, and will terminate with the year 1803, serves chiefly for predicting the nature and fertility of future years ; but, in such conjectures, the Tartars are generally mistaken, as far as I could judge during my residence among them. I could not, however, ascertain whether their inferences are founded on meteorological observations, made during a former period of twelve years.

The Tartars were originally a wandering people ; and those dwelling in the Crimea became husbandmen, in consequence of the narrow limits of their country, the increase of population, and probably from the example of the Greeks, Armenians, and Genoese : it is certain that they are indebted to their predecessors and fellow-inhabitants for the benefits of rural economy. Their mode of building houses, and of enclosing their gardens and fields with dry walls erected of loose rough-stones, their heavy plough, and their carriages in general, (as well the two-wheeled *araba* as the heavy four-wheeled *Madshars*,) were doubtless borrowed from the Greeks ; who also planted and grafted most of the orchards, olive, fig, and pomegranate trees in the mountainous vallies : as, on the contrary, the plantation of the vineyards should rather be attributed to the Genoese.

The plough used by the Tartars is of the same construction as the heavy plough of Little Ruffia, having two wheels with a broad share ; and being of a strong, though clumsy, manufacture. To this implement, two, three, and for new land, four pair of oxen are occasionally yoked according to the nature of the soil ; in which case two or three boys are required as drivers, beside the man who guides the plough. Hence several little farmers generally join in ploughing their lands, especially on the mountains, where cattle are less numerous ; as many husbandmen have but one pair of oxen. The Tartar mountaineers, who possess only small tracts of arable land, manure it every third or fourth year ; but, in the open plains, there is always a sufficiency of new ground, which is generally sown the first year with millet ; the second, with wheat ; and the third with rye or barley. After such
rotation

rotation the land is, according to its nature, suffered to lie fallow; in consequence of which it becomes overgrown with tall, coarse, prickly weeds (*burian*), with thistles, *Mercurialis annua*, *Caucalis daucoides* and *latifolia*, &c; so that a long period elapses before it again becomes fit for pasture. The Tartars have no other method of harrowing, than by fastening long thorny branches between two cross bars of wood, which are weighted with a few stones; and the whole is drawn over the soil by oxen. Hence the seed is very unequally distributed, and lies thick in the furrows. This careless mode of tillage is undoubtedly a principal cause of the frequent failure of crops; as otherwise it would be inconceivable, how such large quantities of corn could, when the coast was inhabited by Greeks *, have been exported to Greece; especially if it be considered, that the whole soil was then newly broken up; and that the Crimea received a greater portion of humidity from the air, before the forests on the mountainous declivities were destroyed. Nevertheless it is a well-known fact, that, previously to the late unfavourable seasons, the Tartars always kept a store of corn in their caves, sufficient for the consumption of several years. In these pits, which are excavated in a dry, clayey, and stony soil, hardened by fire, the corn is for a long time preserved, and effectually

* STRABO, Lib. VII. writes as follows:— *At Cherronesi (solum), exceptis montanis quæ juxta mare sunt, et uberis glebæ, ac præcipue frumentum copiose proferunt; nam ager ibi, quocunque fossore scissus, trigecuplum reddit. Tributi nomine solvebant Mithridati CXXC millia medimnorum et talenta argenti CC, cum Asiaticis locis quæ sunt apud Syndicem. Atque ex his locis olim in Græciam frumentum deportabatur, sicut et salsamenta e Mæotide; et ferunt Leuconem Theodosiâ misisse Atheniensibus medimnos CCCI 000 1000. Idem Cherronesii peculiari nomine Agricola (Γρωγοί) dicebantur, quod qui supra eos habitant Numidæ (Nomades) essent.*

secured from the depredations of vermin. The Crimea, indeed, has ever been considered as the granary of Constantinople; an opinion, which must in a great measure be attributed to the constant importation of corn from Little Russia, by carriers who take salt in exchange for such commodity.

The soil of Crim-Tartary is, in general, a heavy marl: it consists, in the plains, of a sandy white clay, and partly of a black friable earth: in the vicinity of mountains, where the strata of calcareous marl rise to view, it is interspersed with chalk and limestone; but, to the eastward from the Karassu, and over the whole peninsula of the Bosphorus, it is black and clayey; while that of the mountains is mingled with gravel and round stones; being very fertile in every situation, unless there be a deficiency of moisture. In this stony soil, wheat thrives admirably, and it is likewise uncommonly favourable to the culture of the vine: the great number of snails, appearing on the surface of the fields, supplies the land with a kind of marly manure.

The species of grain, which the Tartars principally cultivate, are the following:

1. Winter-wheat, or *Kushuk-Bohdai*: it is sown in August, as soon as there is sufficient rain to admit of ploughing; and the early sowing is generally the most productive. It ripens in the middle of July; and, in fruitful years, yields from eight to ten, though rarely from fifteen to twenty fold.

2. Summer-wheat (*Yaflyk-Bohdai*, or *Kyfiltsha*) is committed to the ground in March, as soon as the weather permits; but it is less to be depended on than winter-

wheat, on account of the frequent droughts occurring in the spring.

3. *Arnaut*, or *Kaidur-Bohdai*, Greek, or *Arnaut-wheat*. Two varieties are sown together, one having long reddish ears, with short beards; the grains of which are disposed at greater distances, and which, in the language of Little Russia, is called *Krasnokoloska*: the other has thick, heavy, and very productive ears, partly yellowish, partly black, whence it is termed *Tshernokoloska*, and by the Tartars *Kara-Kiltshik*. This species of wheat bears a large, beautiful, bright yellow grain, somewhat transparent, and is, in preference to every other, exported to Turkey and Italy. It yields a yellowish very favourable flour, that is in much request for making macaroni: it requires, however, a very rich soil. Hence the variety last alluded to, is sown by the Nagays only on plains, in the vicinity of the Sivash, and on the coasts of the Sea of Azof, especially in the neighbourhood of Perekop. Ears are sometimes found among it, which completely resemble those of the many-eared wheat. Of this grain, the Tartars chiefly prepare their *Buldur*, above described.
4. Spelt, or *Kapli*, is only sown about Kaffa, and in the peninsula of Kertsh, though not in considerable quantities.
5. Winter-rye, or *Kusluk-Arysh*, is deposited in the soil as soon as possible in autumn; ripens in the beginning of July, but still earlier in mountainous situations; and yields more abundant crops than wheat. The Tartars sow smaller quantities of pure rye than of wheat; as,
for

for their own consumption, they prefer mixtures of rye and wheat, termed *Tshavdar*; and of rye and barley, called *Tshalmalyk*; which are thrashed, and used, in a mixed state. For the market, wheat and rye are separately cultivated; but, as various kinds of grain are commonly intermingled on the thrashing-floor, the corn at length becomes too impure; and new grain is purchased for feed. After a succession of mixed crops, the wheat gains the ascendancy; which must probably be attributed to the unequal periods of ripening; as a larger number of grains of rye are shed in consequence of its earlier maturity. Hence some husbandmen have been led to suppose, that the rye is transmuted into wheat. Pure rye is also occasionally sown in the same field, which in the preceding year was appropriated to wheat, but had not sprung up on account of the drought: thus, the former seed appears, together with the wheat, nearly in equal proportions. From this accident probably originated the Tartar custom of sowing the mixtures already specified.

6. Summer-rye, or *Yassyk-Arysh*, is sown at as early a period in March as is practicable: it affords very indifferent crops in dry years; and, even in favourable seasons, yields less than winter-rye; for which reason it is but little cultivated.
7. Common winter-barley, or *Kustuk-Arpà*, is sown at the same time with other winter-corn, in light soils, and ripens in June. It is more productive than rye and wheat; though it does not eventually afford an equal

- number of grains. In some districts, especially in hilly regions, it sooner attains to maturity, if sown early in the spring; but, in such case, it is less productive.
8. Two-rowed, or summer-barley, (*Yastyk-Arpà*) is chiefly sown in plains, in the commencement of spring, after a crop of wheat, and yields from ten to twenty fold.
 9. Oats, or *Yulav*, are cultivated in the Crimea, only on the plains bordering on the Sivash and the Sea of Azof. It affords indifferent crops; as the grains are generally hollow, or very light.
 10. Maize, (*Miffir Bohdai*, or Egyptian wheat; in the Moldavian dialect, *Kukuruffa*,) is sown in rows, but only in kitchen-gardens, and on cucumber and melon-fields. The Tartars partly dress it before it is ripe, and partly store it for winter food.
 11. Millet, or *Tari*, is committed to the ground in considerable quantities in April or May, as soon as the vernal showers favour its vegetation:—it is used both as food, and also for brewing their intoxicating *Busa*. Such grain is always raised on new land, which is afterwards laid down for wheat: frequently, however, it does not succeed, on account of the droughts prevailing in the summer, or does not spring up till autumn; so that it cannot sufficiently ripen. The Tartars cultivate the red and yellow, but not the black variety of this grain. The Crimean millet is generally mingled with a large proportion of foxtail-grass; it is reaped in September and October, and yields upwards of one hundred

hundred fold.—Some farmers employ it as fodder for horses.

12. Foxtail-grass, or *Kunakai-Tari*, is frequently sown with millet, as also separately; and is mostly consumed in brewing *Busa*.
13. Bucharian millet, or *Nar-Tari*; of which two varieties, the *Holcus Sorghum* and *Saccharatus*, are chiefly cultivated in gardens, and serve as food, both for man and poultry. From the straw of the latter plant are manufactured elegant brushes for cleaning clothes, and brooms for sweeping apartments.
14. Chick-pease, or *Nout*, are sparingly sown in April, in whole fields, and ripen about the end of August. They yield about thirty fold; but, in general, the Crimean pease do not become soft by boiling; and, in this respect, differ from those of Spain.
15. Flax, or *Uškülü*, is committed to the ground in March, and reaped in June: it is raised in the mountainous tracts, and along the southern coasts of the Crimea, in irrigated fields. The flax of this country is much esteemed, on account of its fineness, and the length of its fibres. The Tartars of the Steppes also cultivate it, though seldom with success; and their produce is of an inferior quality.
16. Tobacco, or *Tütün*, is sown in hilly situations in April, and transplanted in May into a rich garden soil, between water-furrows. In autumn, the young leaves are gradually removed, dried in the shade, and buried beneath hay-ricks: here they turn to a brownish-yellow colour,

similar to that of Turkish leaf-tobacco, to which they are nearly equal in value. The only species cultivated in Crim-Tartary is the round-leaved tobacco, or *Nicotiana paniculata*.

Sesame was likewise propagated with success in the Crimea; and this plant, together with cotton, might easily be raised. The culture of rice, which was till lately pursued in the low lands along the banks of the Katscha and Belbek, is now justly prohibited by the Russian Government, on account of its unwholesome tendency.

I now proceed to treat of the Tartar method of gardening. In the plains, where orchards occur, the principal objects of cultivation are cucumbers, melons, water-melons, and cabbages; which are sown or planted in irrigated fields, called *Boshtany*. The annual plants chiefly reared are as follow:

1. Water-melons, or *Karpus*, are deposited in the soil in April, and ripen from the end of July till autumn; but they are neither so large nor well-flavoured as those raised in the lower environs of the Dniepr. The best grow at Kilshe-Metshet, a village in the neighbourhood of Karassubasar.
2. Melons, or *Kown*; a fruit of which the Tartars have never reared the best sorts. The most common kind, till lately, was a large oblong melon, with an insipid, white, or greenish pulp. At present, however, the culture of this plant is improved by my introduction of the seeds of foreign cantalupes and Bucharian melons.
3. Cucumbers, or *Chiyar*; of which there is a remarkably large Turkish variety in the Crimea; but, for economical

mical uses, it is inferior to the small, green, Russian cucumbers, that are now likewise cultivated to a considerable extent. The former are gathered in May, though sown only in April: they are filled with meat and rice, and, when thus prepared, are very excellent; but, for pickling, they are by no means equal to the smaller kind.

4. Large quantities of gourds, or *Kabak*, of different varieties, are raised in every part of the Crimea. There are round, white, and yellow sorts; one of them is very large, rather oblong, growing chiefly on the southern coast, and is called the *Honey-gourd*. The variety called *Kubanka*, and the gourd in the shape of a sausage, (*Dolma*), which is usually stuffed with meat, are also occasionally propagated.
5. The bottle-gourd, or *Savut-Kabak*, is very scarce.
6. The egg-fruit, or *Melongena*, of the oblong kind termed *Patildshan*, is cultivated in gardens; being much esteemed as an invigorating delicacy, especially when filled with meat.
7. The *Hibiscus esculentus*, or *Bamia*, is like the preceding vegetable, sown in April, and attains to perfection in July. This fruit was but lately imported from Turkey, and is sometimes cultivated on account of its supposed aphrodisiacal virtues. Its square capsules, resembling husks, are either eaten in a fresh and unripe state, or are dried for winter-use, and stuffed with meat. On account of their clammy juice, it is necessary to scald them

them in boiling water, before they can be dressed for the table.

8. The Jerufalem artichoke, or *Helianthus tuberosus* (*Gerr-Armud*,) is found in a few gardens; and has long been known in this country: on the other hand, potatoes, or *Gerr-Alma*, were first introduced by the Russians. Both succeed uncommonly well, and alike resist the winter in open fields. The former bears annual flowers.
9. White cabbage, or *Kapusta*, as it is also called in Russia, is reared to a considerable extent in well-manured and copiously irrigated fields. It is easy to obtain very large and firm heads; but the quantity of water employed in their culture renders them insipid. Those produced in the vicinity of Eski-Yourt, below Bakhtshifarai, are watered and nourished by the Dshuruk-fu, which is impregnated with all the filth of the town; they are celebrated on account of their enormous size, and cannot be compared with the cabbages raised in any other part of the world. The Tartars fondly relish Sauer-Kraut; but, not understanding how to prepare it, they generally purchase it from the Russians.
10. Onions, or *Arpashik-Sogan*, are here very large and uncommonly numerous. Many Tartars derive their whole support from the culture of these roots, which are transplanted in March.
11. Garlic, or *Sarmuffak*, is not reared to any considerable extent.
12. Leeks, or *Prafs*, are chiefly cultivated by the Greeks and Russians, in their kitchen-gardens.

13. Bro-

13. Brocoli, or *Tshokundur*, is raised in large quantities by the Tartars and Ruffians.
14. Celery, or *Kerevis*, and
15. Parsley, (*Mardonos*), are brought to market only by the Greek and Ruffian colonists.
16. Carrots, or *Chavutsh*, are almost generally cultivated: the roots are seldom red, but of a pale yellow colour; and, in marly soils, after a few generations, they become perfectly white. The same effect takes place in
17. The red beet, or *Utshkundur*, of which the Tartars have a very large and uncommonly sweet variety, forming bulbous roots not unlike the round turnip; and from which sugar might probably be extracted with advantage.

The other culinary vegetables, sold in the public markets, are chiefly supplied by the Greek and Moldavian colonists of Mangush; and Karassubasar is amply furnished with different vegetable productions, as numerous Greeks, Armenians, and Italians devote themselves to gardening in its vicinity. M. SINTSHEFSKY, Surgeon to the Staff, an active botanist, has already made successful experiments in planting the Siberian rhuubarb. In Taurida, however, no person has hitherto attempted to cultivate cotton, saffron, and madder, upon a large scale, though these objects of rural economy might be pursued with great benefit; nay, with some attention, even the sugar-cane would resist the winter in the warm southern vallies extending from Alupka to Yalta.

In Crim-Tartary, the grain is not thrashed with flails, but trodden out by horses, as represented in Vignette 13. For

this purpose, a sufficiently large circle is cleared on an open elevated place, which is levelled; after carefully removing the stones, it is sprinkled with water, and covered with short straw. A post is then fixed in the centre of the circle: as soon as the soil is somewhat dry, it is trodden down by horses, which are fastened to the stake by means of a rope, and driven round it, till the line becomes so short, that the animals are compelled to run in a contrary direction; and, after repeatedly pursuing this alternate career, towards, and from the centre, the floor is at length prepared. The sheaves are now disposed in successive circles, and untied, in order to be trodden. The thrashing is performed by a man driving two or three horses round the post, till all the ears are separated, and the straw is reduced to very short pieces. It is afterwards removed; the grain and chaff are collected into a heap, and winnowed by the aid of shovels: but the same straw is used as fodder during the winter.

IV.

ON THE CULTURE OF THE VINE IN CRIM-TARTARY.

The grape is not only an indigenous production, abounding in the mountainous parts of the Crimea, sometimes having oblong white berries, and sometimes small round black fruit; but it has also been planted in different vallies and districts,
from

from the remotest periods of antiquity. STRABO * mentions the culture of the vine near the Bosphorus, and the care taken to cover it with earth, during the winter, or to bury its roots in the soil, in order to shelter them from the cold ; as is still practised in the vicinity of the Alma and Katsha. It is certain, that the Crimean Peninsula is indebted to the Greeks for the culture of the vine ; which was afterwards extended by the Genoese in the territories occupied by that enterprising people.

The manner in which this plant is propagated on the banks of the Alma, the Katsha, and the Belbek, has already been mentioned : I am convinced, and experience has proved, that it is useless to shelter vines from the cold during severe winters, as is practised in the vicinity of the above-named rivers, by accumulating earth around the crowns of their roots. Such labour, however, is not without some benefit ; for not only the soil is thus more frequently stirred, and cleared from parasitic plants, but vegetation is likewise promoted ; so that the leaves and blossoms, as well as the grapes, appear at an earlier period ; in consequence of which the latter may be suffered to become more perfectly ripe during autumn. The method above alluded to (like that practised in Hungary) consists in training the vines in the manner of bushes, with a stump above the root, so as to produce several prolific shoots : it is doubtless far more productive, but can only be pursued in the richest soils, and tends to exhaust the stocks in a shorter

* *Lib. VII. " In eodem (Bosphori) trajectu ferunt, Neoptoleum Mithridatis legatum astate navali pralio, hyeme equestri pugna, barbaris superiorem discessisse. Sed et vites ajunt in Bosphoro sub hyemem defodi, multa ingesta terra."*

space of time. On account of their fertility, the vineyards of these regions are sold at a high price; though the wine is cheap, and the culture requires great labour: they are usually estimated, according to the number of fruit-bearing bushes, at one ruble each. The manner of planting the layers, on the banks of those rivers, is altogether different from that practised in the southern vallies. First, the land, in which such plantation is intended to be made, is prepared by the plough and spade: next, a post with a point of iron, or of hard wood, is driven perpendicularly into the soil, to a sufficient depth; so that, when the layer is inserted, there may be from five to six knots under ground, and only two visible above the surface. The stake, or piece of wood, is now withdrawn, and a plant deposited in each hole; which is then filled up with loose mould, and afterwards with water, that remains there for a considerable time, owing to the compression of the earth, occasioned by forcing in the stake. According to the state of the weather, such holes are subsequently irrigated every third or fourth week till autumn, or until the layers have taken root. In the succeeding year, the surrounding soil is dug up, and these new plantations are supplied with water from canals.

At Sudagh, and in the other southern vallies, the vine is planted either according to the Greek mode, in small oblong trenches, in each of which two or three layers are deposited in opposite directions, small drains being cut from one to another, for carrying off the water; or, long parallel trenches are dug, wherein the layers are obliquely arranged on both sides: the latter method has probably been introduced by the Genoese. The Tartars, however, seldom plant new vineyards; and their

manner of cultivating the vine consists chiefly in making layers; in burying the old unproductive vine-stocks in deep pits, either in the middle or on the borders of the plantation; and in leaving a few good branches above ground, on which only two eyes are suffered to remain. When this operation is performed on the borders, with a view to extend the vineyard, it is denominated by the Greek word *Ufatma*; and that executed in the centre, in order to fill up the vacant space, is termed *Katavolat*. There is likewise a third method of stocking old plantations, called *Doldurma*: it is effected by putting long twigs deeply into the soil, and separating them from the parent-trunk, as soon as they have taken root. By such injudicious treatment, however, all the vines in the plantations on the southern shore are irregularly set; their roots promiscuously intertwining, not unlike espaliers, under ground. There are only a few foreign proprietors, who have lately applied themselves to the propagation of this useful shrub, by forming new plantations.

As the vine is never covered with foil, during the winter, in any of the southern vallies, where it receives no injury from the severest frosts; and, as the Tartars stir the surrounding earth only once in the spring with clumsy spades, this branch of economy is attended with less expence than in other countries, but is at the same time less profitable. The latter circumstance must chiefly be attributed to the barrenness of the marly soil, especially at Sudagh; for that in the vale of Koos is not only richer, but also more productive. The inhabitants exert all their endeavours to assist nature by forming canals, into which water is conducted from the springs and streams,
for

for the purpose of copious irrigation, both in the winter and in autumn, as well as in the spring, and immediately after the vine has flowered. These irrigations are so considerable, that the vineyards may be compared to fens. By such mismanagement, the quality of the grapes is greatly impaired; and expert vine-dressers water the plants only once in the winter, and in the spring; as, by neglecting those operations, the stock would neither shoot forth a sufficient portion of fertile wood for the succeeding year, nor even bear any fruit; nay, it would perhaps gradually wither. On account of the drought usually prevailing in summer, all the vineyards are planted uniformly in the vallies, where gutters can be employed for supplying them with water.

In the southern dales, the vine is trained as low as possible; so that only three eyes are left on its trunk in the spring, the rest being removed as superfluous: hence all the stocks are knotty, crooked, and lie on the ground, spread out in the form of a fan. Those who leave a greater number of eyes, with the view of obtaining a more abundant vintage, incur the risk of exhausting or spoiling their vines for several years; so that they would be obliged to saw off their trunks near the ground, or even to bury them entirely. After having attained the height of three feet six inches, they yield but little fruit, are exposed to storms, and require to be earthed up for their support. There are, however, some kinds of vines, which may be trained higher, for arbours and espaliers: nay, if newly planted vineyards were properly manured, several varieties would probably shoot up with greater luxuriance, produce stronger branches, and yield more profit. At the same time,
healthier

healthier vine-stocks might be obtained, than at present result from such frequent cuttings. On the other hand, this method would be more expensive than that now practised, on account of the stakes and lattices for espaliers, which would become necessary; nor would the grapes ripen so completely: for even the taller sorts mature more perfectly, and afford sweeter fruit, when they are cropped, and, according to the custom of the country, supported only by the short trunks of the Cornelian cherry-tree, or *Tshatall*; to the branches of which the vine-shoots become spontaneously attached.

At Astrakhan, where the vine is buried with all its wood, it never flowers later than the 15th day of May, unless the spring produce some rare exceptions: it is somewhat later on the banks of the Alma and Katsha, where it is simply over-spread with earth, which is removed in the vernal season. On the contrary, in the southern vallies, where the vine is never covered, the buds and flowers generally appear at least fifteen days later: the grapes likewise do not ripen till the end of September; and, were it not for the fine long autumns peculiar to Crim-Tartary, no good wine could be produced in that country. When, however, the plant germinates at an advanced period of the spring, it is attended with this advantage, that the shoots are never injured by the late frosts, which frequently occur in the vicinity of those rivers. Here, the vintage is generally completed before it begins in the dales of Sudagh and Koos, where it usually takes place on the 1st of October; as, under the government of the Khans, the third day of that month was the time formerly fixed by law for commencing the vintage.

Some

Some Tartars are acquainted with a mode of engrafting the vine, termed *Ashlama*. For this purpose, young layers, or stems, not exceeding two inches in thickness, are selected, and stripped for the length of a span beneath the uppermost knots, where they are sawn off, and the surface is smoothed with a knife: the stem is afterwards slit, and the cleft kept open by means of a wooden wedge. Two grafts, from eight to ten inches long, are next cut on both sides, for the length of an inch and a half, into a cuneiform shape, immediately below a knot; and are inserted in the cleft, so that the grafts cross each other on the external edge, where their bark comes into mutual contact. The stump is then tied with strong pack-thread; a piece of bark, from the vine that has been cut, is laid closely on the incision; a handful of dried leaves is now pressed upon it, and some moistened earth is spread over these in a similar manner; so as to cover two or three knots with mould, and to leave the same number above its surface: weeping vines only, or such as are in full sap, are selected for grafting. Fifteen days after, when the buds begin to shoot, a full quart of water must be poured, every third day, over each stem into a hole made for that purpose, till about the season when barley becomes ripe. The grafts, in general, shoot forth so vigorously in the first year, that in the following spring they will afford layers, and yield fruit: thus excellent varieties of the vine, (not yet introduced into Crim-Tartary), could be readily propagated, and bad stocks be improved. One man may engraft from fifty to sixty stems in the course of a day.

The vineyards occurring in the vallies most favourable to this culture, such as those of Sudagh and Koos, are planted with

with several intermixed sorts of vines, which mostly produce white grapes; because these probably yield here a much stronger wine, and succeed better than the red sort. There is only one small spot in every Tartar vineyard, containing some tall stems which bear red and white grapes: in several of them we observed a similar piece of ground, planted with vines, producing black fruit.

In the first place, I propose to describe the most common kinds of grapes, raised chiefly in the vallies above mentioned. Next, I shall notice the more rare and peculiar sorts, many of which are cultivated in the vineyards of other countries; but I cannot, by the sole aid of memory, ascertain with precision their similarity to foreign species. From these white berries, in particular, the dales of Sudagh and Koos have derived their celebrity; as in point of goodness, briskness, and flavour, they greatly resemble the best fruit produced in Lower Hungary, such as those of Rust and Raterzdorf; nay, with proper treatment, they would even surpass the latter; being on the whole very wholesome, and well adapted to the climate of Taurida.

The white grapes most generally raised are the following:

1. The *Shira-Isyum*, the proper signification of which, in the Tartar language, is simply *grape*. This large, mellow fruit, is of an oval form, of a deep green cast, when reared in a moist soil, but approaching to white in dry situations: it has an uncommonly thin skin; is semi-transparent, remarkably hairy; and yields a large proportion of weak wine, which cannot be preserved.

When the grape is perfectly ripe, its bright emerald

colour often changes to a golden yellow. This species forms large shoots, and delights in a dry soil: its wood is of a yellow-brown hue, somewhat inclining to red. Its leaf is large, coarsely veined, with a white down on the lower surface; it has two deep and two less considerable incisions; and, when dry, assumes a light-brown cast. This grape matures sooner; is more productive than other species; and is sometimes eatable at the end of August. In wet years, it is apt to rot upon the stalk, on account of its great tenderness, especially when suspended near the ground: hence it ought to be planted separately, and pressed earlier, when its wine may be easily improved by adding a small proportion of spirit, during the fermentation. On account of its abundant subacid juice, and fine skin, it is very palatable; and appears to correspond with the *Aspirant* or *Verdal* of the French, and the *Grüne Junker* of the Germans.

2. The *Kakura-Isyum* is, for the excellence of its juice, the most distinguished grape of all Crim-Tartary; to which, and the three succeeding species, the wines of Sudagh and Koos are chiefly indebted for their superiority. The clusters of this species are large and rather loose; yielding oval, mellow berries, which are very sweet, have a thin skin of a yellow or greenish hue; and which, on account of their thick bloom, present a pearly white shade. They afford the best and strongest wine; and occupy nearly one half of the vineyards of Sudagh. When young, the shoots of this vine are slender, and

of

of a clear brown colour; so that it grows up with difficulty, and slowly attains to its vigour; for this reason, also, it is trained uncommonly low. But, when it is well rooted in a good soil, and is supplied with moisture, it thrives luxuriantly in long vigorous branches with large leaves; bears numerous loose clusters; and, in a wild state, climbs high above the trees. Its foliage, especially in a dry soil, is darker on the upper surface than that of the preceding kinds: on their lower sides, the leaves have a white down, with four deep indentures; they assume a rusty yellow colour in the autumn, and likewise fall earlier than those of other species. Nevertheless, the fruit does not ripen till the end of September, when it is uncommonly sweet, and agreeable to the palate. This sort apparently resembles the small *Riesling* of the Germans.

3. There is a variety of the *Kakura-Isyum* which is in every respect larger; yields a thick-skinned berry; and, during its maturation, becomes of a golden-yellow, or brownish hue. Its branches are thick and long, partaking of a reddish-brown tint; the leaf is large, hard, with two deep and two slighter incisions, without down, and coarsely veined. This kind is less calculated for making wine, and is by the Tartars called *Surva-Isyum*.

4. The *Terrgüllmek* is another species of grape nearly allied to the *Kakura*. It has a strong stem, and shoots forth pretty large twigs, of a light-brown colour, with a slightly serrated, reticular leaf; the lower surface of which is covered with a perfectly white down. The

berries are small, of a yellowish pearl-white, somewhat spotted with brown, have a very thin skin, are uncommonly sweet, and easily drop from the stalk. This grape would doubtless afford the best wine, if it were more extensively cultivated. In Hungary, it is known by the name of *Feghiri*.

5. *Myshket*, or Muscadel, properly the great *Riefsling* of the Germans, is a species by no means common in the vineyards; it is, however, plentiful at Koos, and contributes to the strength of the wines produced in that valley. This sort forms a loose cluster, with many ramifications, bearing spherical, firm, and moderately large berries; which, on the side exposed to the sun, frequently become very brown, in a manner speckled; and, if propagated in a good, warm soil, acquire a strong muscadel flavour, that disappears after the fermentation of the wine. So great is their sweetness, especially at Koos, that the grapes, when perfectly ripe, are nearly as luscious to the palate, and their juice is as viscid, as honey. The *Myshket* ripens at the same time with the preceding kind; its stem produces considerable shoots of a yellowish-brown hue; and it should be placed in espaliers or arbours, as it requires to be trained high: for it is probably owing to short training, that the clusters frequently consist of small grapes, not exceeding currants in size, though a few large berries are occasionally intermixed. The foliage is broad, coarsely veined, having a white down beneath; its stalk is of a purple colour, and, in drying, acquires a pale

brown cast. Although this grape begins to ripen so early as the end of August, it may nevertheless be preserved till winter.

6. The *Kondavasta* is a vine with large shoots; having a brownish wood, and broad, coarsely veined, slightly indented, hard leaves; the lower side of which is reddish about the veins, with a white down in the intermediate spaces. The cluster is ramified like that of the Muscadel, though producing larger, loose berries of a perfectly spherical form: externally they are brownish, and covered with spots; have a more watery taste, as well as a thinner skin; and do not in the least partake of its flavour. The *Kondavasta* also ripens, and sheds its leaves at a later period in the season.

7. *Pandafs* is the name given at Koos to a very common and luxuriant vine; which is of a yellow-brown colour, and has long joints. Its coarse foliage is dark green, and strongly veined; the stalks and principal veins have a purple tinge; they are somewhat downy below, with four slight incisions; and, when dry, acquire a brownish cast. The cluster is large, and much ramified like that of the two preceding species; the grapes often hang very close together; are moderately large, spherical, and of a yellowish-green shade; when exposed to the sun, they become brownish, and marked with spots. Their taste is somewhat watery, especially in moist years; but their tolerably thick skin imparts a degree of bitterness and astringency. The leaf of this species retains its green colour to a very late period of autumn.

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— From their great resemblance to each other, these three sorts appear to be only varieties of the same stock ; but the flavour and quality of the wine, obtained from them, are remarkably different.

8. The *Kabak-Isyum* is a vine which forms uncommonly strong wood of a reddish-brown colour ; and, though its joints are short, it grows rapidly, as well as to a considerable height. Its large, thick leaf is of a yellowish-green hue, strongly veined, but perfectly smooth on its lower side ; having sometimes two, rather deep, and at others very slight incisions : it remains on the branch till the autumn is far advanced. The cluster, which is frequently of an uncommon size, has many ramifications like the preceding sorts ; it is loose, and consists of grapes, which are either perfectly round, or even flattened at the top, greenish, and covered with a white bloom. They have a thin skin, attain early to maturity, are sweet and agreeable to the palate, but afford an insipid wine. This fruit ripens in the beginning of September, and the stocks may be trained into very fine arbours.

9. *Kök-Oufun* : a large species of vine producing long shoots. It is of a yellow-brown colour, and has perfectly smooth leaves, with deep interfections ; the principal ribs and stalks of which are of a bright rosy tint. Its cluster is large, and is composed of greenish-white, sweet grapes ; which have a thin skin, are of a considerable size, and rather an oval form.

10. The *Shabash* abounds in almost every vineyard, notwithstanding its bad fruit for making wine. It is
a very

a very strong shrub, with short joints of a red-brown colour, grows rapidly; and bears a profusion of grapes; an advantage which probably renders it a favourite among the Tartars, who cultivate the fruit for the purpose of carrying it to market; and for preparing the marmalade called *Bekmefs*, rather than for expressing wine. On account of their strength, the stocks grow tolerably straight, and do not exceed four or five feet in height. The large yellowish-green leaves are slightly intersected, strongly reticulated, and smooth beneath; they have reddish-brown stalks; fall at a late period of the year; and, when dry, become yellow. The clusters are frequently large; but, in general, are of a middle size, and loose structure: the berries are sometimes of the dimensions of a crow's egg, turning from a greenish to a white bloom; have a thin skin, but are very pulpy, on which account their juice is with difficulty expressed. In a warm aspect they attain to maturity in the latter part of September; though they are later in cold and moist situations. The grapes may be suffered to hang on the branches till the first frosts appear; or they may be housed in October, in which case they will keep till February; and, by preserving, acquire additional sweetness. Were the autumns warmer in Crim-Tartary, the finest raisins might be obtained from this sort; but, for such purpose, they must now be dried in an oven; and, even thus prepared, they are far from being unpalatable. In their natural state, the berries are unfit for making wine; as they

yield

yield a watery must, which speedily becomes acid. I have experienced, however, that by laying them on hurdles, in a moderately heated stove, for a whole night, their juice is not only less difficult to be expressed; but also the wine, thus procured, proves to be very sweet and strong. This grape apparently resembles the *Chaffelas Blanc* of the French, and is likewise said to be common in Italy. Farther, it corresponds with the *Tolstokoreey*, a thick-skinned grape, raised in the vineyards of Astrakhan. There is a large variety of the *Shabash*, the fruit of which is equal in size to a pigeon's egg.

11. *Khadym-Barmak*, or Lady's Finger, is the name given by the Tartars to a grape, which is frequent in all the southern vallies of the Crimea: the Russians denominate it *Byelaya-Afma*, or the white espalier-grape. In a good soil, this vine forms very long shoots; its wood is strong, short-jointed, and of a brownish-yellow shade. Its leaf is large, coarsely indented, and slightly interfect; of a light-green hue, with purple stalks and veins, the upper surface of which is frequently of the same colour; while the lower side is strongly reticulated, but perfectly smooth. In autumn it assumes a yellow-brown tinge. The loose clusters often attain a considerable size, and consist of oblong grapes, which are of a greenish or perfectly white bloom, and in shape resemble the last joint of the little finger. They may be eaten early in the season; and, when fully ripe, assume a golden-yellow tint, being very sweet; but their pulp is hard and in a manner cartilaginous; so that the skin cannot
be

be separated. Hence they may be preserved, like the *Shabash*, till late in the winter, and are easily carried to distant places ; for which purpose they are chiefly reared. The grapes cannot be reduced by the press, and yield but little must : this species corresponds exactly with that termed in Astrakhan *Koseey-Titkee*, or Goat's Teats.

The following sorts are more scarce, and occur in the vineyards only as rarities :

12. The *Arfakhi*, or what is here called Goat's Teats (in the Russian language *Koseey-Titkee*), the finest and richest of all the Crimean grapes ; which appears to have been introduced from Turkey, as it is also termed *Stamboul-Isyum*. Its large, loose clusters are frequently two spans long, and consist of cylindrical grapes of the size of a large finger ; upwards of an inch and a half in length ; often tapering at the fore-end, though obtuse ; of a greenish colour, covered with a white bloom : when fully ripe, the fruit acquires a yellowish shade, and depends loosely from long stalks ; so that it swings from side to side, on the slightest motion. The pulp is rather firm and juicy, but of a watery taste ; and, in point of sweetness, is inferior to the *Shabash* : it is impossible to separate the skin from the fleshy part. In each berry there are two or three stones, which are visible near the stalk for nearly one-third part of the length of the grape. The branches may be easily grafted on the *Shabash* : they require a warm situation ; are nearly of the same red-brown cast as

those of the former, and have strong wood with short joints ; so that old stocks stand erect like trees. The leaf of this species is large, of a yellowish-green shade, very smooth on its upper surface, with prominent and pale veins on its lower side : it has four deep incisions, which peculiarly distinguish it from that of the preceding sort. The fruit may be preserved till a late period of the winter.

13. The *Balaban-Shabash*, or Great Shabash, is a variety spontaneously arising from the *Khadym-Barmak*. The plant produces thick short-jointed twigs, with numerous yellowish-green, verdant, and durable leaves. Its fruit is perhaps the largest of the kind growing in the world ; and its trunk frequently attains the thickness of a man's thigh. This species often occurs in the vineyards of Koos, but less commonly in those of Sudagh. The clusters are not very large ; many of them consisting only of from ten to twenty grapes, and the biggest not exceeding one span in length ; but their berries hang closely together, have a perfectly globular form, and are equal in size to a walnut : they are of a pale-greenish yellow, covered with a chalky white bloom ; and, when thoroughly ripe, are speckled with brown at the extremities. The pulp of this grape is as firm, and adheres to the skin with the same tenacity, as that of the Shabash ; but it matures much earlier, being eatable even in August : in September, the wasps commence their depredations upon it, and cause it to decay. Its taste, though rather watery, is sweetish and pleasant ;

the shoots are of a yellowish-brown tint, and the leaves are pretty large, smooth on both sides, with deep and wide interfections, being more obtusely ferrated than those of the common *Shabash*; and, in drying, they assume a yellow colour.

Of red and black grapes, Crim-Tartary possesses, on the whole, neither any great variety of sorts, nor a considerable number of plantations. The red wine of Sudagh is doubtless far inferior to the white of that place; and though, in prosperous years, it slightly resembles that of Erlau (in Hungary), and in some measure even that of Roquemaure (in France), yet it is not durable, but soon turns acid, and does not possess sufficient briskness; either because we have not the proper sort of red grapes, and the climate is unfavourable to their culture; or, because we are unacquainted with the most judicious manner in which the fermentation of red wines ought to be conducted. Our best grapes for making red wine, and which deserve to be more generally propagated, are as follow:

14. *Tatlé-Kara-Isyum*, or the sweet black grape; which is sparingly reared in the vineyards of Sudagh. It has brown wood; and a strongly veined leaf, slightly cleft; the principal fibres and stalks of which are of a purple hue on both sides; the lower surface being destitute of the usual white woolly substance, and presenting only a delicate downy roughness. On drying, it becomes brown. The clusters are large, ramified, and loose; their black grapes are of an oval form, have a fine skin, and easily drop from the stalks; they have a pleasant sweet taste, and are full of juice, which,

though not red in a fresh state, acquire a high degree of that colour during fermentation, especially if the berries be in a putrescent state. This species appears to be the same grape as that of Burgundy.

15. The *Kara-Isyum*, or black grape (the *Mühlrebe* of the Germans), is still more common : it shoots forth strong and luxuriant branches, of a reddish-brown hue ; may be easily multiplied by layers ; and has large, dark-green, reticulated leaves, the lower surface of which is covered with a white down ; having small and scarcely perceptible incisions ; and becoming altogether of a deep red in autumn, previously to their fall. The cluster is large, close, and composed of black berries, nearly globular : in wet seasons, they are of a considerable size ; have a firm skin ; and are pleasant to the palate ; though containing too little saccharine matter and pungency to afford good wine. Their must is uncommonly delicious ; but the wine proves to be acerb and weak. This kind of grape ripens early, if exposed to the sun ; when it becomes brown, and remains a long time on its stem, without being subject to putrefaction.
16. Another species, perfectly resembling the *Kara-Isyum*, but which bears larger clusters, and grapes of a different flavour, is that termed *Keffée-Isyum*, and also *Stambol-Seeyah-Isyum*, which is not unfrequent at Koos, though rarely met with in other vallies.
17. The *Kysh-memé*, or Goat's Teats, is an early species, which begins to ripen towards the latter end of August, producing

producing large rich clusters ; and has a very strong stem, with reddish-brown branches of a moderate length. The leaves are attached to red stalks, being strongly reticulated on the lower surface, not unlike those of the common *Asma*, but destitute of down : about the time when the fruit ripens, they are covered with spots or veins of a perfectly blood-red colour. The grape is of an oblong form, resembling the *Khadym-Barmak*, and is also of a similar size ; though black, full of a red juice, and having a thin skin : this fruit corresponds with the *Teinturier* of the French.

18. *Tanagos* is a luxuriant species of vine, with a large stem, and branches ; which would be very advantageous to the cultivator, on account of its fruitfulness, large clusters, and durability ; if the quality of its wine were equal to the great quantity it yields on expression. It has large brown twigs, and broad leaves, that are slightly intersected with red stalks and veins ; being tolerably smooth, somewhat downy on the lower surface, and becoming brown when they wither. The clusters frequently weigh from six to ten pounds ; and are closely arranged with globular and very large grapes. They do not uniformly attain to maturity, but remain for a long time greenish on the side deprived of the solar rays. In hot summers, however, they become perfectly ripe, especially in the vineyards of *Koos* ; and assume a brownish-red colour. They have a thin skin ; though watery, are agreeable to the palate ; and may be preserved till the end of the year. In the vale of *Sudagh*, this species is scarce, but occurs more frequently

quently in that of Koos, where a considerable quantity of wine is spoiled by its admixture; because most of the proprietors promiscuously express the different kinds of berries. The grape of the *Valteline* is supposed to correspond with the *Tanagos*.

19. The beautiful coral-red Muscadel grape, *Kirmisi-Misk-Isyum*, or *Alburla* (the *Rauhkleber* of the Germans), is rather scarce, and deserves to be more generally cultivated. It shoots forth vigorous and long twigs of a yellow-brown colour: the leaf has deep and broad interfections, five lobes coarsely indented, with a red stalk; and its lower surface is marked with strong red veins, and a very fine downy velvet. Its clusters are sometimes large and loose, but occasionally small and close; being frequently compressed into a globular form, and depending from long stalks. The grape has one or two stones; is spherical, somewhat hard-skinned, and has a poignant, though very agreeable, muscadel flavour. It ripens at a late period of the season, and may be preserved till the winter is far advanced.
20. The *Fodsha*, or *Bakhsha*, is an excellent sort of grape, not unfrequent on the banks of the *Katsha*; and which I first introduced at *Sudagh*. — This fruit becomes sweet in August, as soon as its greenish colour begins to change into a beautiful rosy tint; and, notwithstanding its delicacy, remains on the stalk till October, without spoiling. The branches are strong, short-jointed, upright, moderately long, and of a brown-red hue: the large leaves are slightly serrated, with purple stalks and veins, being of a dark-green colour on their upper side; covered

covered with a white down beneath; and in drying become brown. The clusters are close, of a moderate size, consisting of small, round, rose-coloured, thin-skinned, and semi-transparent grapes, which are very sweet.—They apparently resemble the *Klävner* of the Germans.

21. The *Afma*, a vine with lofty branches, is one of the most common sorts, occurring both in the best vineyards of Sudagh and Koos, and along the whole southern coast. Of all the vines, this produces the strongest and tallest stems, the branches of which are generally trained on poles and frames, so as to form arbours; or they frequently climb above the trees. It bears abundance of fruit: the twigs often attain the length of two fathoms and upwards in the course of one summer. Its leaf is large and coarse to the touch, of a dark-green colour, with reticulations; being concave on the upper surface, and convex below; on which side it presents a velvet-like roughness. The cluster, especially on old stocks, is often the largest produced by any species of vine, and weighs several pounds; the berries are closely arranged, about the size of the last joint of a man's thumb; of an oval form, and a dark-brown colour: their bloom is blueish. Notwithstanding the beautiful appearance of these grapes, they are by no means adapted for making good wine; as the liquor they yield is always weak and acerb, and soon becomes acid, even when the must is boiled. Though their skin is thick, they are remarkably juicy, may be easily transported,
and

and be preserved till a late period of the winter; on which account they are in great request at Sudagh, among the carriers of Ruffia Minor, who purchase considerable quantities for supplying the markets of that province.—There are two varieties of the *Afma*; one of which ripens early, bearing loose clusters of smaller, sweeter, and blacker grapes; while the other is a later sort, and its fruit never becomes perfectly mature.

22. In the vineyards of Sudagh, we rarely met with a grape which is frequently cultivated in those of Otuus: in size, taste, and pulp, it resembles the *Balaban-Shabash*, but is of a fine rose-colour, and a more oblong form: it does not present very large clusters, and attains early to maturity. The berries resemble pigeon's eggs in size; are of a yellowish-green transparent hue, with close, bright-red streaks; contain one or two considerable stones, and have a tender skin, that cannot be easily separated; when perfectly ripe, they are of a rosy tint; the branches are neither very long nor vigorous: the wood is of a brownish-yellow colour; the leaf-stalk is of a red cast; the leaf is divided into five coarsely indented lobes, with deep interfections; being destitute of down on the lower side, but strongly veined and reticulated. No grape is more grateful to the palate, and pleasing to the eye, than the variety just described.

23. The *Mufgulli* produces beautiful, firm fruit, which succeeds admirably in warm dry summers, and is well adapted

adapted for carriage, as well as for preservation during winter. The berries often hang closely together in clusters; have an oblong form; and are not much larger than the last joint of the little finger; being of a brown-red, occasionally of a blackish colour, pulpy, and sweet: they have a thin, almost tasteless skin, and sometimes one or two stones: when the fruit withers, it acquires the agreeable flavour of fermented wine. This species parts with its foliage earlier than the *Asma*, which it resembles both in its branches and leaves, excepting that it is weaker. There is another variety of this fruit, raised at Koos, to which is very similar the former, being uncommonly sweet, and having a thin skin.

24. In the vineyards of Koos, there likewise occurs a vine bearing a large cluster of small reddish grapes; they have only one stone, and in form are not unlike the black *Mühlrebe* of the Germans. The branches are of a light-brown colour; the leaf is small, slightly cleft, and somewhat downy on the lower surface: this plant produces considerable stems.

Other vallies of the southern coast are said to possess still more numerous varieties of the grape, with which I am not particularly acquainted. A Greek physician, resident at Kutshuk-Ofen, has communicated to me the following:

Galkitsh, a red grape.

Tylki-Karassi, a black, long grape.

Usta-memet-Karassi, black.

Irin-Shava-Karassi.

Tuok, *Marava*, *Kurt-Kuiruk*, *Seitiin-Isyum*, all of which are black.

Ismir, or Egyptian grape, black.

Kumino, white.

Ketshi-Memessi-Tashli, and *Kairee*, white.

Kumla, a strongly flavoured, white muscadel grape.

Beyas-Tanagos, white.

Satshma-Danessi, also white.

Beside these, he has observed four sorts of vines, which are either naturally wild, or have been suffered to degenerate.

All the white grapes in Sudagh, Tokluk, and Koos, as well as in other parts of Taurida, are merely pressed in troughs, composed either of large flat stones, or of wood: the lees are passed through presses of a simple construction, and the must, instead of being allowed to work, is poured into casks, the bung-hole of which is left open until the fermentation be completed. These different processes are so negligently conducted, and most of the proprietors permit such large quantities of bad grapes to be expressed with berries of a better quality, that it is matter of surprize to find the wine, in general, tolerably good. On the contrary, those who are more cleanly, and pay greater attention to the preparation of their wines; who suffer the grapes to become perfectly ripe; gather them in favourable weather; pour the juice into clean casks; give the must a small addition of good brandy, previously to fermentation; supply the vessels properly; proceed cautiously in clarifying the wine, which process may be performed in the beginning of March, or earlier; thoroughly fumigate their casks with sulphur, and keep them in good order; such cultivators

tivators obtain wines, especially in Sudagh and Koos, which in point of excellence may vie with the best and most salubrious liquors designed for the table. Farther, if the grapes be judiciously selected, dried in the sun, in ovens, or by other means, they will yield a sweetish wine, that is in no respect inferior to what the Germans denominate *Straw-wine*. If the liquors be bottled at the right time, and kept in the same manner as Champagne, they effervesce, expel the cork, and burst the bottles with similar force. The red wines, indeed, are suffered to ferment upon the lees; but, in general, neither for a proper length of time, nor in vats of sufficient capacity: the fruit is likewise used in an immature state; or the fault may also lie in the assortment of the grapes, so that the wine is commonly of an inferior quality. All the Crimean wines are most agreeable to the palate, in the first and second years after their clarification. If they are intended to be preserved for several years, they ought to be drawn off into bottles: for, notwithstanding every precaution, when kept in casks, they speedily acquire a bitterish, or slightly acid, taste; and easily form a mouldy scum on the surface.

The principal obstacles to the prosperous culture of the vine, in Crim-Tartary, are the following:

1. The high rate of wages:—on account of the scanty population, labourers are paid half a ruble for a day's work, though the prices of the wines are low; because many of the neighbouring towns and provinces are supplied with those of Moldavia and the Archipelago, which are not charged with sufficient duties on their importation, and are consequently cheaper. This circum-

stance, and the indifference of purchasers, with respect to the quality of the wine, are the reasons why no person endeavours to prepare superior liquors, except for his domestic use; as the generality are not disposed to pay more for good than for bad wine; nearly all the grapes being sold and exported in the state of must.

2. The ignorance and neglect of the Tartars in planting new vineyards; because they do not place the layers sufficiently deep in the ground, but depend entirely on irrigation; so that the young vines either perish, or become sickly and languid; and, at the expiration of many years, produce only feeble vineyards, which cannot subsist without a constant supply of water: for this reason, very few new plantations are formed; as no cultivator is inclined to lay out money upon an uncertainty, while the majority are not opulent enough to advance the first expense.

3. The numerous injuries to which vineyards are exposed in this country, from vermin as well as the inclemency of the weather; and which I now proceed to detail.

When, for instance, frequent fogs issue from the sea, or heavy rains occur, at the time of flowering, most of the blossoms are destroyed; as, in fact, those of all fruit-trees are thus damaged. Farther, the produce of the vineyard is often diminished by hail, which bruises and lacerates the grapes; often by drought during the fruit-season, together with the want of water for irrigation; and sometimes by early frosts, or rainy weather in the month of September. Still more frequently, when the grapes are nearly ripe, violent tempests

arise, which beat down a large quantity of the berries, or at least injure them to such a degree, that they speedily become dry or putrid.

The most destructive enemy to the vine, in Crim-Tartary, is a small kind of caterpillar, peculiar to that country: as soon as the buds begin to open in the spring, it eats its way, especially into the fruit-buds, and devours the germ of the grape. Two or three of these small worms, creeping from one germ to another, are sufficient to injure a whole vine in such a manner that it bears no fruit, and produces not a single regular shoot during the succeeding year. I have seen some vineyards at Sudagh, where these vermin have particularly multiplied for several years, so as completely to ruin, and strip them of their leaves. This diminutive caterpillar, with sixteen legs, which has hitherto remained a non-descript, commits its depredations towards the end of April, and in the month of May, especially in old vineyards. When full grown, it is half an inch in length, and of the thickness of a straw. Its head is black, projecting anteriorly, pointed at the fangs, and can be withdrawn under the first ring, which is scutiform, black, and edged in front with a yellowish-white stripe. Below, its body is also yellowish-white, and wrinkled; above, it is black, as far as the lateral margin, where this colour terminates. On each side is a row of pale-red tubercles, with tufts of whitish hair; and along the back there are two similar rows with yellowish tufts. The caterpillar has rather a slow pace, spins from beneath, and in general fixes on the buds and most tender leaves, to which it firmly adheres. On being touched, it rolls itself together, though not very closely, and

and remains for some time in this position: it is uncommonly voracious. Previously to casting the skin, it draws a delicate web over its body upon a leaf. During the whole month of May, these vermin nibble, eat large holes through, nay, often totally devour the leaves; towards the end of that month, they gradually commence to spin, and to convert themselves into a chrysalis; from which, at the end of a few weeks, there issues a small moth, entirely similar in form, and almost in size, to the female of the *Sphinx Statices*, but of a blackish colour, with a faint lustre (*aeneo-fusca*).

Next to this caterpillar, the smaller locust with rose-coloured wings, or *Gryllus Italicus* (which frequently commits depredations in Spain), has for several years been very destructive to the vineyards of Crim-Tartary. This insect, indeed, appears annually on the dry eminences in the arid southern regions, from the European boundary as far as the Irish, and the mountains of Alta; but it is only in particular years, that it multiplies in such numbers, as to become pernicious. After the severe winters of 1799 and 1800, these locusts became so numerous in the Crimea, that they traversed the air in prodigious swarms; and wherever they settled, they not only despoiled all the herbage and culinary plants of their verdure; but even stripped such trees as were agreeable to them, especially the vines, of all their foliage, and committed great ravages in the country. Their habits, respecting which BOWLES relates many wonderful and true particulars, in his Natural History of Spain*, are certainly very remarkable. In 1799, I had no

* *Introduction à l'Histoire Naturelle, et à la Géographie Physique de l'Espagne, traduite de l'Original Espagnol de Guill. Bowles, par le Vicomte Flavigny. Paris. 1776. 8vo. p.p. 249, and following.*

opportunity of observing these vermin in the first period of their existence, with uninterrupted attention; nevertheless, they sufficiently distinguished themselves by the injury they occasioned in many districts, especially in the dry dales of Sudagh and Koos; where they caused extensive damage, both in the reptile and in the winged state. In that year they appeared chiefly in July and August, proceeding from the sea-coast into the valley; and, where they found no weeds in the vineyards, they stripped all the vines of their leaves, especially along the borders of plantations, and in the direction taken by the swarm. The clusters of large, but unripe, grapes remained till the end of September, on these denuded vines, without increasing in size, filling with juice, or ripening; so that they were hard and green like pease, and thus afforded ocular demonstration of the detriment, that must arise from the practice of plucking the leaves from vines, which is recommended by many cultivators*. It was not till October, when the vines had again acquired leaves from the collateral buds, that they ripened, though imperfectly, and afforded a bad acidulous must. In a winged state, these locusts at length devoured the foliage of the trees; and the *Fraxinus Ornus*, or Manna-Ash, in particular, was every where seen stripped to its very summit: nor were orange and nut-trees exempted from

* The only work on the subject of gardening in which I find the plucking of the leaves reprobated, and their utility in nourishing and ripening the fruit, and perfecting the buds against the next year, properly inculcated, is "*La Pratique du Jardinage, par M. l'Abbé Roger Chabot.*" Paris. 1770. 8vo. II. Partie, p. 656.; a work that on the whole evinces great experience. The leaves are certainly the organs, by which plants not only imbibe moisture, but also decompose the air, and inspire the requisite portion of caloric and oxygen.

their depredations. On the eminences, where the soil was rather loose, they were observed in companies, depositing their eggs in holes, which they bored with their jagged posteriors ; and which already afforded a bad omen for the ensuing year. Great numbers of them, however, were carried by northerly winds into the sea, where they perished, and were afterwards washed on shore in heaps.

The severe winter of 1799-1800, instead of diminishing these vermin, seemed rather to have favoured their propagation. In the beginning of May, the young brood appeared every where in large swarms, and especially in the southern vallies, at first taking their course towards the sea, but afterwards moving to and fro in various directions. Some of the swarms consisted of innumerable millions, and frequently, where they lodged, formed an entire black covering over the ground, upwards of one hundred fathoms in length, and from forty to fifty in breadth. In serene warm weather, the locusts are in full motion in the morning, immediately after the evaporation of the dew ; and, if no dew has fallen, they appear as soon as the sun imparts his genial warmth. At first, some are seen running about, like messengers, among the reposing swarms, which are lying partly compressed upon the ground at the side of small eminences, and partly attached to tall plants and shrubs. Shortly after, the whole body begins to move forward in one direction, and with little deviation. They resemble a swarm of ants, all taking the same course, at small distances, but without touching each other ; they uniformly travel towards a certain region, as fast as a fly can run, and without leaping, unless pursued ; in which case, indeed, they
disperse,

disperse, but soon collect, and follow their former route. In this manner, they advance from morning till evening, without halting, frequently at the rate of one hundred fathoms and upwards in the course of a day. Although they prefer to march along high-roads, foot-paths, or open tracts, yet when their progress is opposed by bushes, hedges, and ditches, they penetrate through them: their way can only be impeded by the waters of brooks or canals; as they are apparently terrified at every kind of moisture. Often, however, they endeavour to gain the opposite bank with the aid of overhanging boughs; and, if the stalks of plants or shrubs be laid across the water, they pass in close columns over these temporary bridges; on which they even seem to rest, and enjoy the refreshing coolness. Towards sun-set, the whole swarm gradually collect in parties, and creep up the plants, or encamp on slight eminences. Woe, then, to the vineyards in which such a swarm settles for the night; and, if the following day should happen to be cold, cloudy, or rainy (in which weather they never travel), they not only consume all the weeds and vine-leaves in it, but frequently, when the weeds do not supply them with sufficient nutriment and exercise, they completely strip the bark and buds off the young twigs; so that these shoots remain, throughout the summer, as white as chalk and full of sap, without producing fresh foliage. The same fate awaits those places on which they settle for the purpose of casting their skins. It is a remarkable circumstance, that, while the vine-blossoms continue close, the insect does not attack them; but, as soon as they are blown, it devours the whole of them in the most rapacious

manner, the stalk only being spared. The plants, which they formerly consumed with the greatest avidity, were those chiefly occurring in vineyards; such as the *Carduus Tataricus*, *Salvia nemorosa*, *Millefolium*, *Melilotus*, *Cerithe*; the fetid and poisonous *Conium maculatum*, which does not prove fatal to them; the *Asparagus volubilis*, *Ebulus*, *Coronilla varia*, and *Valentina*; various kinds of *Geranium*, *Linum* and *Inula*, *Centaurea solstitialis*, and all bitter vegetables. On the other hand, they did not prey upon any kinds of grasses; some species of grain were also exempt from their depredations, especially millet; as well as sedge, which is the favourite food of the great erratic locust; together with the *Aristolochia Clematitis*, that also luxuriantly grows in the vineyards; the *Clematis Vitalba*; the different *Euphorbia*, *Rumex Patientia*, *Mentha sylvestris*, *Artemisia maritima*, *Contra*, *Pontica* and *Austriaca*; the rough *Echia*; all the species of the *Atriplex* and *Salsola*; the *Stellera Passerina*, the milky *Sonchus*, *Chondrilla*, and *Prenanthes*, *Rhus Cotinus*, and *Coriaria*. After having consumed every other vegetable, they attack the Caper-buds, the *Beta Cycla*, and the various *Euphorbia*; to the latter of which it must probably be ascribed, that many insects (while they were casting their skins for the last time), in the year above alluded to, firmly attached themselves to the stalks of tall plants, and even to trees, where they ultimately perished.

Among the innumerable swarms of the young brood of the *Gryllus Italicus*, which has a blackish appearance, the larger larvæ of that species, as well as of the *Gryllus cærulefcens*, were seen but thinly interspersed during their march. Various particular

particular locusts, without wings, such as the *Gryllus verrucivorus*, *viridissimus*, and some others, had also increased in the last year far beyond their ordinary numbers; but they did not travel in company with the former, though they likewise greatly damaged the vineyards, and often bit off the stalks of the grapes. It was remarkable, that, in the same years, when these vermin became so numerous, the large erratic locust, from the banks of the Dniepr, together with the small locust, also overspread the whole government of New Russia, and a part of Little Russia, in countless swarms: they did not, however, visit the Crimea.

As soon as the small locusts acquire wings, after parting with their last skins, they progressively disperse themselves, but still fly about in large swarms: even the young ones in the last period of their metamorphosis, no longer strictly adhere to their route; sometimes wandering in a retrograde, sometimes in a lateral direction, and pursuing different courses. On attaining their perfect state, they begin to pair; the males die shortly after; but the females still continue their depredations in the months of July and August, till they have deposited their eggs; when they speedily disappear. The deficiency of starlings, as well as of other birds preying upon insects, which have greatly diminished in the Crimea, affords but a distant hope that the myriads of this noxious breed will be lessened; unless Nature should check their increase by other means, and again reduce their numbers, so that they may become less detrimental to vegetation.

It is a fortunate circumstance for the vineyards of Crim-Tartary, that the *Curculio Bacchus*, which is so destructive to

other places, has hitherto been rarely observed in that country *. Crows, magpies, and other birds which are so injurious to the grapes in the vicinity of Astrakhan, are here less frequent. On the other hand, great damage is occasioned by the grey hares, which are very numerous and bold: during the winter, they not only bite off the shoots of the young vine-layers down to the lowest knot, as if they had been cut with a knife, and strip the young fruit-trees of their bark; but also devour and spoil large quantities of ripe grapes. The mature fruit is likewise eaten with avidity by dogs, which, at the time of vintage, are not suffered to enter the vineyards; by badgers, foxes, hedge-hogs, that are very large in the Crimea, and by partridges. Lastly, in dry years, extensive mischief arises from the innumerable wasps infesting these regions.

The vallies of Sudagh and Koos, which afford the best wines, yield in prosperous years certainly upwards of thirty thousand Eimers †, of which at least one-third is sent to Kherfon, and into the more remote governments, as far as Kurfk. In the year 1784, when the Crimea became subject to Russia, the Eimer of Sudagh wine was sold at the low rate of between fifteen and twenty kopeeks; as the quantity at that time exported was very inconsiderable: in the following years it rose to forty, and even to fifty kopeeks; in 1792, during the last Turkish war, to a rouble; in 1793 to a rouble and thirty kopeeks; and, at the close of the war, to a rouble and seventy-five kopeeks, nay, even to two rubles. At present, it is sold

* According to Sparrmann, a small *Curculio* of this species commits great depredations, during the spring, on the vine-buds at the Cape of Good Hope.

† The Russian Eimer contains ten quarts, or Tartar Occas.

for a ruble and a half, or from one hundred and fifty to one hundred and eighty kopeeks. The wines of Koos and Tokluk generally produce twenty kopeeks less than the former : and those of Taraktash and Katsha are about one-third cheaper. The insipid wines of Kutlak and of the Alma, which are scarcely potable, when kept till the month of May in the following year, are now sold at from sixty to seventy kopeeks the Eimer ; because they may be purchased earlier in autumn, and are more speedily clarified ; the whole stock of these liquors being in general exhausted before the return of spring. — Formerly, the Tartars prepared large quantities of *Bekmes*, or marmalade, and *Misseles*, or syrup, from their grapes. But the sale of the wine and fruit is at present found to be more profitable ; and almost every proprietor has begun to distil brandy from the lees, which are suffered to ferment in vats, or in pits well covered and plaistered with clay : the lees, obtained from one hundred Eimers of wine, generally yield four Eimers of brandy.

With a view to afford due encouragement to the cultivation of the vine in Crim-Tartary, and in other southern provinces of Russia, not only an increase of population is necessary ; but also the foreign wines (which are partly imported through the harbours of the Black Sea, and partly from Moldavia, by the Dniestr) should, for several successive years, be charged with higher duties, in order to raise the price of native wines, and to enable the land-owners to plant new vineyards ; as they require to be cultivated and tended for at least five years, before they yield the smallest profit to the proprietor. By such means, I am convinced, that, in the course of fifteen or

twenty years, the culture of the vine would attain to such a flourishing state in the southern provinces, that all the interior governments of the Russian empire, as far as Mosco, and even beyond, might be supplied with good and wholesome wine of our own produce, instead of the pernicious and adulterated foreign liquors; for which, in St. Petersburg alone, not to mention the other parts of the empire, we annually pay upwards of a million and a half of rubles, in the balance of trade.

Experience has already proved, that the vine may be successfully raised on the banks of the Volga, as far as Tzaritzin; on those of the Don, as far as the Medyeditza; of the Donetz, beyond Tshuguyef; of the Dniepr, beyond Kiov; of the Bug, even to Olviopol; and in all the southern regions. But, in order to produce good wines, the cultivation ought not to be extended on the Don, above the line of Tzaritzin; nor, on the Donetz, above the mouth of the Lugan; and on the Dniepr, not beyond the line of the Ukraine. The countries, best adapted for the three most valuable products of a southern climate, silk, cotton, and wine, are those in the vicinity of the Terek, the Kuma, the Sarpa, and Lower Volga; the Lower Don, the Mius, the Krinka, the Yelantshik, the Kalmius, the Berda, the Konkaya, the Moskovka, the Samara; the Voltshie Vody, which falls into the Samara; the Ingul and Inguletz, the Lower Bug, the Knestr, and lastly, the whole Crimea; where, for such purpose, it will be sufficient to select the districts according to their situation, and the nature of their soil. Admitting, however, that some tracts should not yield wine of the desired quality, it might still be employed in the distillation of brandy, and

and in the preparation of vinegar ; or the grapes might be dried, and thus sweetened in ovens.

Although the situation of the high grounds, near the Sea of Azof, appears to be favourable, yet these are not propitious to the culture of the vine, being too much exposed to cold winds and fogs ; besides, they are too dry, and the low grounds are too moist, and impregnated with saline particles. In the vicinity of fens and forests, the night-frosts occurring in the month of May frequently prove detrimental to the blossoms.

Vines are still reared as far as Baturin, nay even in Glukhov ; but they seldom bear fruit, unless in well-sheltered spots, because the vernal night-frosts injure their blossoms, as well as those of peaches and apricots, so that the grapes seldom attain to maturity. Such is likewise the case on the line of the Ukraine, and even in the neighbourhood of the monastery of Svätogorski, which is situated nearly forty versts in a more southerly direction than the line on the banks of the Donetz. On the whole, it appears that throughout the Ukraine, which lies to the North of the last-mentioned line, the culture of the vine cannot be introduced with advantage. It would, however be erroneous to judge in this case from the provinces of Germany situated in a similar latitude ; as the temperature of the Russian Governments greatly differs from that of the former. Thus, at Tor and Bakhmut, night-frosts occur in the middle of August, nay, sometimes as early as the 12th of that month, so as to cause buck-wheat, the *Solanum*, and *Stramonium*, to wither. The mulberry-tree resists the frosts in a far more northerly region, as is evinced by the uncommonly beautiful plantation belonging to the Crown at Belefskaya-Krepost, and containing

containing nearly two thousand trees ; likewise by another still more numerous in the vicinity of Kiov, where they attain to a larger size. This tree is even raised at Glukhov ; and, in more northerly districts, where it might not be able to withstand the severity of the winter, it could be cultivated as brushwood : for, beneath the snow, the lower buds of the branches would not be nipped by the frost, and would furnish a sufficiency of annual shoots to supply the silk-worms with food, if the people were inclined to apply themselves to the rearing of those useful insects.

V.

ON THE ORCHARDS OF THE CRIMEA.

The orchards of Crim-Tartary bear great resemblance to the gardens of the German farmers. Trees irregularly scattered, and a fine sward, which may be watered by means of canals, constitute their chief ornaments. They generally occupy the low-grounds along the brooks and rivers, and are planted in vallies that are provided with a spring. From the antiquity of the trees in the mountains, especially those of the walnut, it is evident that they are mostly old plantations, formed by the Greeks and Armenians : for few of the indolent Tartars are disposed to undertake the toil of preparing the land, and of planting new orchards. For this reason also, scarcely a trace of gardens occurs in the champaign country, formerly uninhabited. The Tartar mountaineers, however, attend to their
gardens ;

gardens; stir the soil around the trees, which they clean, manure, and irrigate, and thus endeavour to derive profit from their industry. But they cannot depend upon a good fruit-harvest oftener than every third or fourth year; for, generally after a premature spring which brings out the blossoms, either a late frost succeeds, or dry, fetid mists not unfrequently arise from the sea, and destroy all hopes of the season.

The inoculation of trees is little known among the Tartars and Greeks: hence it cannot be expected that they should raise good peaches and apricots; as these cannot be propagated by engrafting. But, in the last-mentioned operation, they are uncommonly skilful; and no method can be better contrived, than that now practised, especially in the neighbourhood of Bakhtshifarai: it consists in grafting into the roots to the depth of nearly a span beneath the ground, in consequence of which the stems are not only kept in a much more healthy condition, but in the course of time the graft also spontaneously strikes root, and becomes more hardy.

The best sorts of fruit in the Tauridan orchards are pears, apples, quinces, and plums: the cherries are but indifferent; peaches, apricots, and other kinds of fruit, are of such a quality as might be expected from their present mode of culture.

Of *Pears*, the Crim-Tartars have several varieties; among which, those called by the Russians *Duli*, (being thicker in the middle than at the top), are particularly excellent for their tender and juicy pulp.—Of these I shall first mention the large pears, *Bosdurkhan*, *Mullahti-Armud*, *Sultan-Armud*, *Kök-Sulu*, and the late pear *Albusan*: next in quality are the musk-pears, *Misk-Armud*, which ripen as early as the month of

June, and that called *Ashrapai*. A small round fort, which attains to maturity at the same time with the May-cherries, is therefore termed *Kiräs-Armud*, or the Cherry-pear, not to mention other forts, such as the *Ball-Armud*, *Ak-Armud*, *Khayar-Armud*, or the Cucumber-pear, *Bey-Armud*, or the Princes-pear, &c.

There is likewise a considerable variety of *Apples*. The most celebrated are the *Sinap-Alma*, or Apples of Sinap, of which numerous waggon-loads are conveyed every autumn to Mosco, and even as far as Petersburg; where they are sold at a high price. This apple has a peculiar oblong form, with scarcely any depression at the stalk, and is valuable not only on account of its beautiful appearance and fine flavour, but also for its durability, as it may be preserved till July in the succeeding year, without decaying or becoming wrinkled; at which time its flavour is in the highest perfection. It is hardly eatable before the new-year, and in size does not exceed the German Borsdorf-apple. The next, in point of excellence, are the *Tshelebi*, which ripen early, but soon lose their flavour; beside other kinds of various sizes, most of which attain to maturity early in the season.

The Tartars have three sorts of *Quinces*. Two of them differ in the time of ripening, being called Summer and Winter-quinces; the latter are of a smaller size. But, the third sort forms a large trunk, and has somewhat broader leaves than the two preceding: it is chiefly remarkable for the size and mildness of its fruit. These quinces (which are also cultivated along the Caucasus) may be eaten in a raw state, as they possess no astringency. The Tartars denominate this fruit *Haiva*.

Beside the common, small black *Plum* there is a very peculiar kind resembling the sloe, being round, and adapted for drying; farther, a small red plum, termed *Al-Erik*; the large yellow Egg-plum, or *Sara-Erik*; and the large violet Brignole, or *Dshan-Erik*.

Among the different cherries, the Tartars have the *Vishnä*, or common sour cherry, and a larger Anatolian variety of it, which greatly multiplies from the root; farther, an early yellow and red cherry; a similar fruit, termed *Al-Kiräs*, which is of a brighter red colour, somewhat later, and also grows in the woods; next, the black-heart cherry, *Kara-Kiräs*, or *Targana-Kiräs*; and especially a pale, wax-yellow, semi-transparent, large cherry, called *Ak-Kiräs*, which is by no means common in the orchards of the Crimea; nor have I ever seen it in those of other countries. This variety has the advantage, that, notwithstanding its delicacy, it may be suffered to remain on the trees, from June till August.

I have already observed, that no good ameliorated sorts of other stone-fruit are to be found in Crim-Tartary; *Sheffala*, or Peaches, and *Serdaly*, or Apricots, are for the most part indigenous productions: of the former, there is a variety, with a yellow, and another having a white pulp. In Alupka only, we met with some trees bearing large fruit. Small, sweet almonds, or *Badem*, are rarely cultivated.

Medlars, or *Mushmula*, are very frequent in gardens, and also occur in the woods, apparently in a wild state. The Tartars graft them upon quince-stocks; by which operation they attain to a larger size. This abundant fruit is put into vats, and water poured upon it: after suffering the infusion to

ferment throughout the winter, it affords an agreeable beverage of a subacid, vinous taste.

The service-tree, or *Yuväs*, *Sorbus Domestica*, is very common in all the mountains, and forms a large tree, that is equally beautiful in its foliage, clustered blossoms, and fruit. There is a less numerous variety of it, producing large and entirely red fruit: the berries of the different sorts are uniformly pear-shaped. The wood of this tree is of a fine red colour; being uncommonly hard, and alike excellent for cabinet-makers' and wheelwrights' work.

The chornel cherry-tree, or *Kyfiltshak*, is likewise common in the woods and in orchards; but in the latter, especially on the banks of the Salgir and the Katsha, there is a sort bearing much larger fruit. This low tree frequently blossoms in February and March, nay, often in January; in which case the vernal frosts generally destroy the cherries. Its stems are often cut down, and employed as props for vines; the shoots of which thus extend to a considerable height. The fruit is gathered in large quantities, and is suffered to ferment, for the purpose of converting it into brandy; but, if the stones be put into the still, they impart a disagreeable flavour to the spirit.

The *Lotos* (*Kara-Kurma*) or *Diospyros*, grows only in the southern dales, both in a cultivated, and in a wild, or degenerated state: for it does not appear to be indigenous. The same observation is applicable to the *Celtis Orientalis*, or *Karkafs*; the fruit of both being eaten by the Tartars.

The pomegranate-tree, or *Nar*, is also found only in the southern vallies, and seems to have been originally introduced among the orchard-trees, though it has in a few situations propagated

pagated itself by seed, on the stony declivities of those warm dales, where it bears a diminutive juiceless fruit. In a similar manner, the olive-tree, or *Seitun-Agatsh*, is frequently planted in gardens, arranged in rows, and thus produces considerable trunks; but it likewise occurs in many places between the rocks as a wild shrub. The same remark applies to the fig-tree or *Indshir*, which is more frequently discovered in a wild state; though, in the orchards, it presents three varieties of fruit; namely, the small white fig, a brown fig of the same form, and lastly, a larger brown fig of an oblong shape. During the last two severe winters, the fig-trees were mostly frozen above ground.

The introduction of the laurel must also be ascribed to the Greeks: it has become naturalized chiefly in the valley of Alupka, where it grows among the rocks, producing fine trees. The Tartar inhabitants of this dale have imbibed a notion, that the travellers who sometimes visit the southern coast of the Crimea, are attracted thither solely by the laurel, and on that account have commenced its extirpation with savage industry.

There are three sorts of mulberry-trees, *Dut* or *Dufhi*, in Crim-Tartary; the white, the common black, and a foreign kind: the last is apparently a distinct species, and differs remarkably from the two former, both in its thick, strong leaf, which frequently resembles that of the fig, and also in its fruit. Its berry is nearly as large as that of the common plum, of a pleasant acidulous taste, being more favourable than the other sorts, and affording a very wholesome repast. It produces large, knotty trees, with singularly curved ramifications, and

the

the wood of which has a very deep citron colour. The Tartars denominate this species of mulberry *Stambul Dufhi*, and prepare from it a strong vinegar.

Walnut-trees, or *Dshiväs*, are frequent in all the orchards of the southern vallies, occasionally of an enormous size; and their fruit is conveyed in large quantities to Russia. Walnuts are among the most profitable products of the country, as they are sold at the rate of eight kopeeks, and often as high as a rublé per thousand. In favourable years, many trees bear from ten to fifty or sixty, nay, even one hundred thousand nuts. The large thin-shelled species occurs but rarely. The wood is employed in the Crimea principally for cabinet-work.

There are three sorts of hazel-nuts, or *Funduk*, in Crim-Tartary; namely, the common sort is frequent in orchards and woods, the timber of which is used for hooping casks, and for poles serving to support the felt-huts of the Nagays; the oblong Lambert-nut, or *Baden-Funduk*, which forms much larger bushes; and lastly, the *Corylus Columna*, or *Trebisond-Funduk*, with short, obtuse nuts of an uncommon size, the extensive bushes of which are likewise raised exclusively in orchards.

Only two chestnut-trees, or *Kaftan*, grow in the Crimea, as I have already observed. These solitary trees stand in the gardens near the village of Derekoi, and almost every year produce fruit of a diminutive size: it would, however, be easy to propagate the chestnut in the vallies bordering on the mountains.

VI.

ON THE FOREST-TREES AND SHRUBS OF THE CRIMEA.

In the southern mountainous district of Crim-Tartary, especially upon the more ancient chain of hills, considerable forests are still in existence. The modern calcareous eminences for the most part produce only low wood or shrubs, except along the banks of rivers and brooks: such diminutive size must probably be attributed to the superficial covering of the soil with vegetable mould. On the contrary, the dales between the loftier mountains are interspersed with enormous oak, as well as red and white beech-trees, which are equally useful in naval and military architecture.

Among the evergreen trees in the Crimea, the most conspicuous are the sea-pine, or *Pinus maritima* (in the Tartar language *Tzaam*), and two species of juniper. The former grows chiefly on the western part of the high chain of mountains along the sea-coast, as far as Yalta and Alufhta. The largest beams obtained from it are about two and a half, or at most three fathoms in length. Its wood is durable, resinous, but very knotty; on which account it cannot be sawn into good planks. Its resin may be collected in large quantities; has a pleasant odour; and is employed in fumigations, like that of the mountain-pine procured from Moldavia. Its larger cones clearly prove, that this pine is a peculiar species. I have found, on the sea-coast, a kind of pine-cones that were of an intermediate size between these and the cedar-cones, and which certainly belong to some Anatolian or Caucasian pine.

In

In the forest, through which the horse-road leads from the Yaila down towards Kokos, I remarked some isolated, rather young pines of the common species (*P. sylvestris*), that do not occur in any other part of Taurida, and the origin of which it is difficult to explain. They were about ten or twelve in number; and in the same district I have seen the only wild Service-tree growing in the Crimea.

Of junipers, there is one bearing red, and another producing black-berries. The former seems to be the *Juniperus Oxycedrus*; it grows only as an inferior tree or brush-wood, in a stony soil, frequently in the open plain; has leaves like those of the common juniper; and bears large red berries, divided into three protuberances, which do not acquire that colour till they ripen in the following spring, when the tree is again in blossom. The other, denominated *Salma-Kara-Ardytsh*, forms trunks, often more than a foot in diameter, the wood of which perfectly resembles that of the Bermuda cedar, and possesses a similar odour. It grows straight like a cypress, attains to a moderate height, and the trunk may be lopped, after which it shoots forth new branches. The green twigs are like those of the favin; the berries are large, of a black colour when ripe, and covered with a bloom of a blueish cast.

To the trees above enumerated, the Yew still remains to be added: it acquires a considerable height and thickness in the clefts and vallies of the Alps or Yaila, where it is by no means rare.

The following umbrageous trees occur in Crim-Tartary:

1. Two species of oak, or *Peled*; the common, and the grey dwarf oak, or *Cerris*, with acutely indented leaves
and

and tubercular acorn-cups ; which flourishes chiefly in stony mountains, and, in consequence of the goats browsing upon it, often appears of a very low and stunted form. Hence its trunk seldom exceeds the thickness of a man's thigh : its wood is uncommonly hard, and of a dark-brown colour.

2. Two kinds of Beech, or *Kok-Agatsh* ; namely, a larger sort, twelve feet in circumference ; and a small species, the branches of which nearly touch the ground, having diminutive leaves, and delighting in a rocky soil : it covers whole mountainous tracts, even those of calcareous marl, and never acquires a strong or lofty trunk.
3. The Beech, or *Byk* ; which, in many parts of the higher mountains, forms thick groves of straight trees ; and, where it grows in a less crowded state, frequently has a trunk two yards in circumference.
4. The Dwarf-Elm (*Kara-Agatsh*, or Black Wood) is a very common tree in woods, hedges, and gardens ; its roots, like those of the dog's grass, spread beneath the turf, and in every direction produce new twigs ; so that its shrubs prove in many places injurious to the vineyards and orchards, especially in the valley of Sudagh. These young shoots appear in two different forms : they either grow slender, with thin smooth rods, such as are observed in old trees, and generally in the shape of a fan, with the extremities somewhat curved, resembling the feathers of a bird's wing : or, they are shorter and more stunted ; all the twigs, being longitudinally streaked to

the very point, in a similar manner with those of the cork-tree. The dwarf-elm blossoms at the same time as the cornel-tree, and wild crocus: it appears to be totally different from that of Siberia, which I have formerly described *. It seldom produces trunks exceeding one foot in diameter: the leaves are frequently covered with large, hollow excrescences, of the nature of gall-nuts, which are occasioned by small flies. It may be lopped, as well as the common elm, to which it bears an affinity, and forms a new head within the space of two years.

5. There are four species of Poplars in the Crimea; namely, the White and Black Poplar, (*Kavak-Agatsh* and *Adshirek-Agatsh*,) frequently occurring on the banks of rivers and brooks; the Trembling Poplar, or Aspen-tree, (*Ak-Agatsh*,) on the woody declivities of the high mountains; and the Lombardy Poplar, introduced from Italy, to which the Tartars have given the Turkish name of *Sälvi*, appropriated to the cypress. The last mentioned species is planted during the spring, by means of poles, in gardens and near villages, along brooks and canals. As soon as the trees begin to thrive, they are sometimes cleared of all their shoots; when they speedily form the most beautiful pyramidal heads, and attain to an astonishing height: but, notwithstanding their solitary and frequently exposed situation, they have never been observed to be shivered by lightning, broken by violent

* *Flora Rossica*, Vol. I. p. 76. Tab. 48.

storms,

forms, or torn out of the soil. Their long and vigorous roots run by the side of ditches to a great distance, with extensive ramifications, and sometimes make their way into wells. Their wood is extremely hard, but not durable when exposed to moisture. They are never found in a wild state; and, though they are frequently, and even annually, in blossom, producing woolly catkins, no young plants have been remarked to arise from its seed, such as may be reared from that of other poplars.

6. The Linden-tree, or *Ukee-Agatsh*, as well as
7. The Maple, or Plane-tree, (*Kürütsh-Agatsh*), is found only in mountainous forests. More frequent is the Common Maple, or *Acer campestre*, by the Tartars called *Kashik-Agatsh*, or Spoon-tree; because its wood is excellent for being manufactured into spoons.
8. There are two kinds of Ash in Crim-Tartary. In the cold vallies are found large trunks of the common species, but in the warm southern dales, the Manna-Ash, or *Javur*, is abundant. The latter grows straight and handsome, with a beautiful head: its root descends deep into the earth, has many ramifications, and is so firm, that it cannot easily be destroyed either by the axe or by fire: the knots are peculiarly adapted for the naves of wheels, and its strong wood is often elegantly veined. Although both the large and the smaller manna-locusts, in the Tartar language *Orakfi*, are equally numerous, yet no traces of manna have been discovered on this tree.

9. Some kinds of Hawthorn, especially that with black fruit, and almost destitute of thorns, (by the Tartars called *Budaut-Agatsh*): it forms large, strong trees, with very hard wood, in the mountainous forests, and along the borders of gardens. There are, besides, as I have already mentioned, a variety with brownish, oblong berries; another with large red, and the common kind, or *Oxyacantha*, with small red berries; which, in the Tartar tongue, are denominated *Yapushkan* and *Kutsher-Agatsh*; farther, the *Cratægus Aria*, *torminalis*, and *orientalis*; bearing great resemblance to the Neapolitan medlar-tree, and being frequent both in the woods and in the abandoned orchards of the southern vallies.
10. Of wild fruit-trees, the following sorts occur in the Crimean woods; viz. early and late apples, or *Atshi-Alma*; early and late pears, or *Kertmé*; and the pear with an olive-shaped, woolly leaf, (*Ashlap* or *Pyrus orientalis**) the blossoms and fruit of which grow in clusters; three species of cherries; the common four kind; a light-red, sweet cherry, produced by a lofty tree; and lastly, the *Mahaleb* cherry, from a tree having veined wood: it is common at road sides, in the hedges of gardens, and occasionally in woods; when the trunk is felled, it diffuses, for a considerable time and to a great distance, an agreeable odour resembling that of bitter almonds, and which the wood also retains for a long period. This wild, bitter cherry, (which the

* *Pyrus sylvestris orientalis, folio oblongo incano* Tournefort. *Coroll.* p. 43.; apparently the same with the *Pyrus nivalis* of Jacquin. *Flor. Austr.* p. 4. *Tab.* 107.

Tartars denominate *It-Kiräs* and *Topek-Kiräs*, (or dog-cherry,) is the principal fruit, used in preparing ratafia and cherry-brandy.

11. Wild Plum-trees, or *Erik*, are not so common in the woods as the preceding. On the other hand, the Sloe, or *Kögem-Agatsh*, grows with great luxuriance in all open situations. Other fruit-trees, which are likewise found in a wild staté, have already been mentioned.
12. The Turpentine-tree occurs chiefly in the southern vallies, in the vicinity of deserted or at present unoccupied dwellings, and may perhaps be an exotic; but, in some places, it grows in great abundance, with short trunks of the thickness of a man's body; and the wood of which resembles guaiacum, both in weight and colour.
13. The Strawberry-tree, or *Kyfil-Agatsh*, thrives, as I have before stated, only on steep rocks, exposed to meridian rays, along the southern shore. This tree is more valuable on account of its beautiful appearance, with its expanded blood-red branches, evergreen foliage, and numerous blossoms, as well as its fine wood, than for its fruit, which is here deficient in juice.

In the mountains and their forests, I found the following low shrubs:

14. The round-leaved Alder, or *Dsherk-Agatsh*. It seldom attains a remarkable height.
15. Two species of the Spindle-tree; the larger of which, on account of the resemblance its wood bears to that

of the box-tree, is by the Tartars called *Keeyk-Shemsher-Agatsh*.

16. The Water-Elder, or *Opulus*, is thinly scattered in the woods.
17. The Wayfaring-tree, or *Lantana*, is by the Tartars denominated *Kirmyshak*, or *Tarak-Agatsh*. From its wood they generally manufacture the tubes of their tobacco-pipes, which are also in great request among the tobacco-smokers of Russia and Germany, where they are known by the name of *Gordina* or *Gordovina*.
18. The Wild Rose (*It-burun* or *Yapan-güll*), of which there are here two species, beside the *Rosa pygmea*; namely, the *Rosa spinosissima*, a small one with a white blossom; and a red one, which grows at the sides of brooks, sometimes attains the height of one fathom and a half, or even two fathoms, and forms stems about one inch in thickness.
19. The Privet, or *Ligustrum* (*Birügos*), is equally frequent in woods, as well as in and about gardens.
20. The Wild Cornel-tree, or *Cornus sanguinea*, in the Tartar language *Tshyuma-Agatsh*.
21. The Wild Vine, the trunk of which is often as thick as a man's arm; and which, with its extending shoots, sometimes exceeds ten or fifteen fathoms in length.
22. The Virgin's Bower, or *Vitalba*, (in the Tartar tongue *Tshermavuk*,) twines itself around trees like the twigs of the preceding plant, and at length stifles their growth. It is well calculated for arbours, and its blossoms diffuse a very agreeable odour.

23. The

23. The Ivy, which however seldom produces a considerable stem.

The shrubs growing in more open situations, are :

24. The Christ's-thorn, or *Paliurus*, which the Tartars call *Teken*, and the Russians, on account of its barbed branches, *Derzhi derevo*. It is common in dry, stony districts and mountains, and is very useful for constructing slight hedges.

25. Two species of Tamarisk, (*Tamarix Germanica* and *tetrandra*) ; flourishing in the beds of rivers.

26. A weak species of Willow*.

27. The Berberry, or *Khadym-Tustuk* ; and

28. Bramble-berries, or *Burulgen*, growing in the inclosures of gardens, and on the banks of rivulets.

29. The Elder, or *Eski-Agatsh*, (also called *Kavall*, and *Mir-ver-Agatsh*.) which, with its variety the *Ebulus*, frequently occurs in the neighbourhood of villages, and in gardens.

30. The Sumach, or Tanner's-tree, (*Sary-Agalsh*) ; the acid, red berries of which form an ingredient in the preparation of animal food : its deep yellow wood is likewise useful. The whole plant is excellent for tanning, but it thrives only in the southern vallies.

31. The *Cotinus*, or *Dshufut-Yaprak*, (that is, the Jew's leaf ; because the Jews particularly employ it in tanning morocco,) is also frequent on the northern side of

* The *Babylonian Willow*, though not indigenous in Crim-Tartary, thrives there uncommonly, as well as the *Oriental Plane-tree*, the *Laurel-Cherry*, the *Jujuba*, and *Great Mimosa*.

- mountains, and on open eminences; where it forms round spreading bushes.
32. The Medlar-thorn, or *Pyracantha*, (*Skaitan-Teken*, or devil's thorn,) is very common on stony mountains, where it spreads widely over the soil.
 33. The *Mespilus Amelanchier* is of the same family as the former, but occurs more rarely.
 34. The Judas-tree, or *Cercis fliquastrum*, is also scarce.
 35. The Grey Spiræa, or *Spiræa crenata*.
 36. The Yellow Jasmine, or *Jasminum fruticosum*.
 37. The Spanish Lilac, or *Irgyvan*, grows in many gardens, and is probably an exotic; as well as,
 38. The Italian Honey-suckle; which is found in some places, especially in the neighbourhood of the Burultsha.
 39. The *Coronilla Emerus*.
 40. The *Colutea arborea*.
 41. The Saltpetre-wort, or *Nitraria*.
 42. The Caper-bush, or *Shaitan-Karbus*.
 43. The high-branching *Salsola ericoides*; and, lastly,
 44. The *Astragalus Poterium*, or bastard buckthorn of the Crimea.

VII

OF THE PLANTS USEFUL FOR ECONOMICAL PURPOSES.

I have already, in another work, communicated a catalogue of the native plants of Crim-Tartary, to which I have only to add

add the *Lathraea Phelypaea*, occasionally occurring near the banks of the Salgir; the *Aegilops incurvata*, that has been observed in various places, on dry eminences; the honey-suckle; and some other common vegetables. I shall therefore briefly notice such plants as are applicable to economical uses.

No nation is better qualified to instruct us in the nature and properties of esculent vegetables, than the Greeks; who are compelled by the strict fasts of their church, especially in the spring, to search for every edible root and herb. Thus, they eat the thick roots of some abundant species of *Scorzonera*; of the very common *Ornithogalum pilosum*; of the *Lathyrus tuberosus*, *Chaerophyllum tuberosum*, and *Hordeum bulbosum*, which last is known to the Tartars under the name of *Gerr-Funduk*, or earth-nuts; farther, the sprouts of the wild mountain-asparagus; of the *Sisymbrium Loeselii*, and of the *Crambe orientalis*, which last greatly resembles brocoli; and the stalks of a species of *Heracleum*, by the Tartars called *Baltrakan*; the young leaves of the *Rumex Patientia*, and of the goose-foot, or wild orache; of the vine; the berberry-bush, and even of the acrid *Arum Maculatum*; also the corn-salad, or *Valeriana Locusta*, that sprouts early in the spring; brook-lime, thriving in running waters throughout the winter; wild purslane; dandelion, while it is germinating; wild celery; common wild garlic, or *Allium descendens*; and several others. Of the caper-bush, they eat not only the young shoots, greatly resembling asparagus, but likewise the buds, fruit, and every other eatable part of that shrub. I have not, however, observed that they make use of the sea-cabbage, though they are well acquainted with the *Crithmum*, the genuine rock-samphire of the English.

There is an abundance of vegetables in the Crimea, affording excellent food for cattle, and consisting not only of a great variety of grasses, but also of the best vegetables recommended for artificial meadows; for instance, the white and yellow melilot; the white mountain and bastard trefoil; hop-clover; the large red trefoil; several kinds of medic, such as the Swedish and common lucerne; the *Esparfette* of the French; various fine species of vetches; the *Lotus* and *Coronilla*; the common goats'-rue, or *Galega*; the common burnet saxifrage, or *Pimpinella Saxifraga*; the *Poterium Sanguisorba*, or upland burnet, &c. The mountains, as well as the champaign country, present good pasture for sheep; and, in ordinary winters, the flocks are suffered to remain in the fields. Camels find rich food in the *Centaurea ovina Kali*, and other prickly plants; nor is there any scarcity of seeds for feeding poultry.

Of plants useful for dyeing, Crim-Tartary produces, in a wild state, madder; some fine species of mountain goose-grass; woad; dyers' green-weed in great abundance; and, on the southern coast, even the litmus, or *Croton tinctorium*: the safflower succeeds uncommonly well in gardens. The genuine oriental saffron might also be cultivated with advantage: of the four indigenous species of crocus, two of which produce their beautiful blossoms in the spring, and two in the autumn; but none yields the real saffron. The seeds of the great peonies are surrounded with a red pulp, the juice of which affords a fine and durable purple dye.

For tanning, the Tartars possess valuable plants in the Sumach and *Cotinus*. They might, however, also make use of the tamarisks; the dwarf grey-oak; the small horn-beam tree, which

which covers whole mountains ; the roots of the *Statice coriaria* ; wild sage ; and the *Vinca*, or perriwinkle. In fact, no branch of manufacture promises to be more lucrative to the inhabitants of the Crimea (which supports very numerous herds of cattle) than tanning ; as the Turkish harbours present a certain and profitable mart for all sorts of prepared leather.

Among the plants delighting in a saline soil, there is an abundance of the different species of saltwort, not only on the Crimean coast, and around the lakes ; but also in every situation, where the earth is in the slightest degree impregnated with salt or nitre, the *Atriplex laciniata* grows in profusion : from the latter plant, several Greeks have acquired the art of burning excellent Soda, or *Kallia* ; which is exported to Constantinople, and even to the more distant maritime towns of the Mediterranean.

Numerous medicinal plants, which are at present obtained from the Levant and Greece, might be cultivated in Crim-Tartary ; where many of them are already indigenous. Among other natural productions, genuine turpentine might here be collected. The *Convolvulus Scammonia* ; peonies, the roots of which are very aromatic ; the *Belladonna* ; together with those salutary herbs in fevers, the *Chamaedrys*, *Chamaepithys*, and *Scordium* ; rue and sage ; balm ; Pontian wormwood ; *Dictamnus albus* ; *Ruscus*, and other officinal plants, grow in abundance on the mountains, and are very efficacious. Beside other marine vegetables flourishing on the rocky and stony banks in the sea, there occurs the peculiar worm-berb employed by the Greek apothecaries ; and which they also distinguish by the corresponding name of *Levithochorto*.

VIII.

OF THE TAME AND WILD QUADRUPEDS, BIRDS, FISHES,
AMPHIBIOUS ANIMALS, AND INSECTS OF THE CRIMEA.

The rearing of cattle has in all ages been, and still is, the principal employment of the Tartars; though more extensively in the champaign country than in the mountains. The inhabitants of the hilly regions, beside sheep and goats (of which, however, most of them are destitute) keep in general only one or a few yokes of oxen; that are used by them for conveying fire-wood and timber, ready-made wheels, and various kinds of wooden utensils to the market-towns: they also possess a few cows, and seldom more than one horse, though many have none, except during the thrashing-season. In a few villages, situated on the mountains, hairy buffaloes form part of their live-stock. On the other hand, in the plains, every village has considerable numbers of sheep and black cattle; all are provided with horses; and many of them keep camels.

The Tauridan camel has two bunches, as delineated in the twenty-fourth plate: it attains here a larger size than among the Kalmuc Tartars; and we observed animals of a white and yellowish-white, but less frequently of a black hue. They are seldom used as beasts of burden, but are often yoked to the large four-wheeled waggons, or *Madshari*, especially on bad roads, and during winter. Opulent Tartars take a pride in conveying their families from place to place, or in travelling to town in covered waggons, drawn by camels. The yoke is placed between their neck and the first bunch; and is of a
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peculiar construction, adapted to the purpose. From the hair of this quadruped, the Tartar women of the plains manufacture a narrow cloth, which is used in its natural colour, and is extremely warm, soft, and light: if it were made broader, it would afford a more lucrative article of commerce. The manufactory at Novoroffeisk, or Ekaterinoslav, formerly produced, from the same material, a broad cloth, which was much esteemed. The mild winter of the Crimea is very favourable to the habits and propagation of camels; and these quadrupeds are more numerous than is commonly supposed. In the year 1796, a thousand camels were bought up in Crim-Tartary for the use of the army in Persia; and they were procured in the course of a few weeks, without any remarkable diminution of their number. The price of a full-grown camel is generally from one hundred to one hundred and fifty rubles. In armies, they might be of great utility as beasts of burden, and also be serviceable in putting to flight any cavalry, the horses of which are unaccustomed to the sight of these curious animals.

The breeding of horses is carried on to a considerable extent in the plains; many of the Murfes having large establishments, and paying great attention to blood. In general, however, there is a deficiency of good male horses for breeding; nor are they properly managed. In the year 1798, twenty fine stallions were sent from the Imperial stables into the Crimea; and they would have been eminently useful in improving the breed, had they been suffered to remain in the country for a longer time.—The horses of the Tartars, inhabiting the mountains, are small, uncommonly hardy, and sure-footed; as they are accustomed from an early age to run upon rocks and dan-

gerous hilly paths ; on which account they are sold at from thirty to sixty rubles a head ; this being a higher price than they are apparently worth.

The horned cattle of the Crimean plains are smaller than in the Ukraine ; being similar to those of Hungary, often of a grey or black, but rarely of a brown colour : they are heavier and slower in their pace than the cattle reared on the mountains, where the breed is small, though strong and swift ; so that the latter delight to trot when harnessed, and run up and down the steepest paths with facility. Among the oxen of the mountains, many are of the colour of antelopes ; and usually have a more elegant shape and finer limbs.

There are three varieties of sheep in the Crimea. Those most commonly occurring in the plains, are of a middling size, generally white or black, seldom grey, and still more rarely brown. Like all the Crimean sheep, they have an elongated tail, which for half its length is overgrown with fat and covered with coarse wool. In winter, large flocks are driven into the mountains, on the Chersonesus, and other places along the sea-coast, where the falls of snow are slight ; so that they find a scanty subsistence throughout the winter, and shelter themselves in cavities of rocks, or beneath projecting cliffs. Some Tartars construct regular sheds of wicker-work (*Kosh*), where the sheep remain during the night ; or they are folded in the fields during the day, on account of their dung, and are driven home for the night. Of these animals the grey sheep (that furnishes the celebrated Crimean lamb-skins, or furs) is only a variety : they are produced by a peculiar pasture, in the north-western angle of Crim-Tartary, which is by the natives called

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Woolly sheep

Woolly sheep

called *Tarkhan-Dip*, and by the Ruffians *Tarkhan/koi-Kut*; being fomewhat lefs handsome on the peninfula of the Bosphorus, but soon degenerating in other places. A wether of this breed is represented in the twenty-fifth, and a lamb in the twenty-sixth plate. Of these handsome grey furs, or *Shmushki*, upwards of thirty thousand are in some years exported by the way of Perekop, mostly to Poland; where they are in great request, and sold at a high price. They are disposed of, on the spot, according to their beauty and greater or less abundance, at three rubles and upwards a-piece. They are bought up, chiefly in the spring, when many lambs perish, and are particularly numerous after late frosts and long winters, which prove fatal to many of the young animals in the month of March. The sheep feed principally upon a species of *Centaurea*, that is common in the Crimea, forming large round bushes, with innumerable small flower-buds, by the Tartars termed *Kurai*, or *Bin-Bash*; for which purpose large quantities of it are collected, especially on the *Tarkhan/koi-Kut* *. Of black lamb-skins, more than fifty or sixty thousand are annually exported from Crim-Tartary. — Lastly, the mountain sheep are much smaller than those of the plains, but are celebrated on account of their fine soft wool, which bears a higher price, and was formerly imported by the French, to a considerable extent. A large portion of it is at present bought up for the cloth manufactory at Novoroffeisk; though, notwithstanding the prohibition, some part is still clandestinely carried out of the country. It has frequently been proposed to improve

* See the first volume of these Travels, p. 538.

the Crimean breed by the introduction of Spanish sheep ; but the commotions of war, the distance, and the little maritime intercourse with Spain, have hitherto prevented the execution of this scheme. Nevertheless, by means of Spanish rams alone, under proper inspection, and by selecting the best ewes, a great, if not a perfect, amelioration of the Crimean wool might be effected. Nay, considerable advantage might be derived, if the Romelian sheep from Adrianople (being nearer to us and more conveniently situated for transportation), or the improved Hungarian breed, were introduced : a plan, which would be attended with a trifling expence. No province of the empire is more favourable to the rearing of sheep, than Crim-Tartary ; nor is any better adapted by nature, especially for such as are not stationary ; because, in the summer, they may visit the plains and the cool Alpine pastures of the Yaila, and in winter the southern vallies, that are free from snow, or the level tracts along the sea-coast ; and, because the winters are in general so mild, that they may constantly remain in the open air.

The breed of goats is likewise considerable in the Crimea, particularly on the mountains, and is also attended with profit, on account of the dearness of the skins, which are used for the manufacture of Morocco leather. The fine wool, that may be obtained in large quantities by combing them in the spring, is not collected by the indolent Tartars. The goats are mostly small, and some of them are distinguished by remarkable colours : many are black, with their legs, bellies, and checks of a bright yellow ; others are uniformly of a flame-yellow, or reddish cast ; but those with white hair are very scarce.

It

It often happens, both among goats and sheep, that two lambs or kids are produced at the same time. — The breed of Angora goats might easily be introduced into this country: attempts, made for this purpose, were attended with success; so that even the Crimean goats with Angora males frequently brought forth kids with fine hair: they require, however, to be well sheltered and tended, especially in severe winters.

Among the dogs, there is a race of large greyhounds, mostly with pendent ears and tails; which are particularly adapted for hare-hunting, and, though inferior to the Caucasian breed, are in great request. They are in general white, grey, yellow, and black, and are great favourites with many of the Tartar Murfes.

Although the Crimea does not remarkably abound with game, yet deer are frequent in the wooded mountains, and grey hares throughout the whole country; so that upwards of twenty-thousand hare-skins are annually exported by way of Perekop. The majestic stag is found only in the vicinity of the Tshatyrdag. Bears have never been seen in this country, excepting such as are brought hither by Gypsy bear-leaders. Wolves, on the other hand, together with foxes and badgers, are numerous, especially in hilly districts. Martins are sometimes caught in the mountains; but the common and spotted pole-cats, as well as weasels (none of which here become white in the winter), are still more rare in the plains. It is remarkable, that, in all the Crimean woods, which so much abound in nuts and acorns, not a single squirrel is to be discovered. The *Suslik*, or Mountain-mouse, and the great *Mus Jaculus*, are by no means common in the plains. A small

shrew-mouse inhabits the banks of the Beeyouk-Ousehen, and is seldom seen in other places. The large grey house-rat, and the common mouse, multiply rapidly; but the black rat has not hitherto appeared; and of field-mice, we noticed only the common yellowish species.—In the sea, small seals and dolphins are frequent.

Of birds also, the Crimea has neither any great variety nor abundance. Eagles never build their nests here; but the common black vultures are frequent; and, especially in winter, boldly enter the plains in search of carcases. These birds are sometimes accompanied by a small white species of vulture, with black wings, and a bald head of a perfectly citron-yellow colour: it has not hitherto been described, and is probably a native of Anatolia. The migrating falcon rarely settles on the mountains; but the hawk, kite, and some small birds of prey, are rather numerous. The small owl, both with and without ears, as well as the small-headed screech owl, are alike common in the vallies; but the great horned owl is more rare. The grey royston crow, the magpie, the blue crow, and the jack-daw, are frequent, and remain in the country throughout the winter. The feathers of the last-mentioned bird possess an extraordinary lustre; and in its nests, particularly on the banks of the Salgir, young ones are often found perfectly white. On the other hand, field-crows never appear, and ravens are very scarce. Starlings, indeed, were formerly seen in large flights; but, for some years past, their number has diminished: which circumstance, perhaps, may also account for the great increase of locusts. Thrushes pass through the country in autumn; but the black-bird remains, and builds its nest in
the

the skirts of woods. Partridges are uncommonly frequent throughout the year, though quails arrive chiefly in autumn; when they visit the vallies between the mountains, and migrate late in the season towards Anatolia. Great numbers are caught by the shepherds with baskets attached to poles, which are placed over the birds while they descend close to the ground. Many are also taken by means of sparrow-hawks and dogs. Among the smaller birds, I have in Crim-Tartary only met with the common nightingale (not that sweet warbler of the night, whose notes are incomparably more perfect); the robin-red-breast; the wood-pecker, or *Certhia*; the grey wren; and the large titmouse. Of birds preying upon grain, there occur the sparrow, and the grey-hammer, which remains throughout the winter, and often perishes during intense frosts. The king-fisher is rare, but the bee-eater, or *Merops*, is frequent, as well as the common swallows; though the latter form only one nest in the season. Wild and tame pigeons are not very numerous. — Of poultry, the peacock, guinea-hen, turkey-cock, and common hen, thrive very well, and are extremely prolific. The goose and swan are likewise reared; but the tame duck is bred with difficulty: along the sea-shore, and on the banks of rivers, are to be seen only the March-duck, the long-tailed duck, and the teal; which, like wild geese, remain upon the sea, near the southern coast, throughout the winter. The red and Turkish ducks are scarce. The bittern is frequent only in the Bosphorus, and cormorants are birds of passage. There appear to be but few species of sea-gulls; among which the laughing and the black-headed gull are the most distinguished. The common crane seldom builds its nest

in the Crimea ; nor does the stork visit that peninsula : on the contrary, the small crane, called the Numidian virgin, is very frequent, and constructs its nest in open plains, chiefly in the vicinity of salt-lakes. The young birds are brought to market by the Tartars in great numbers, and are speedily tamed, inso-much that they afterwards breed even in farm-yards. Grey, red, and white herons, as well as the small tree and night herons, are not uncommon. The lapwing, the woodsnipe, or *Totanus*, and two species of marsh-snipes, visit this country only at the time of their passage, and remain here till the frost compels them to retire. The great bustard is seen in large flights, especially during the winter, when it snows and freezes ; thus, pieces of ice become attached to its wings, and the feathers of its crop ; so that the bird is unable in the snow to take the run previous to its flying, in consequence of which many are caught by the hand, or by means of dogs, and are brought to market alive. The experiment of rearing young bustards has repeatedly been attended with success ; they become very tame, but never hatch their eggs. The small bustard seldom occurs.

There are but few serpents in the Crimea, probably because the small cranes destroy them, as well as mice ; though the large dart, or *Coluber Jaculator*, is rather common in the mountains ; but the adder and viper are extremely rare. Of lizards, there are found in the mountains, the *Lacerta apoda* (in the Tartar language *Stshoka*), which I have described in the Memoirs of the Academy of St. Petersburg : farther, a small lizard very numerous between rocks ; it is slender, with brownish or black spots on the back, of a flame-yellow colour on the lower side, and frequently with a green stripe over the shoulders :

shoulders: in the plains, green and brownish lizards are very common; they perfectly resemble those of Europe, but are of a more considerable size. Of frogs, this country produces the large species, which I have formerly described*, and an abundance of spotted, croaking toads†; the green frog is rare, and of a very beautiful colour.—Two species of land-tortoises are found in the moist, low grounds.

The fresh waters of Crim-Tartary contain but few fish, the principal of which is the trout: it is taken in some of the mountain-streams, that also afford a small kind of barbel, the groundling, and the *Couvieres* of the French. In some lakes, near Kaffa, the *Cyprinus Idus* is also caught, and is here mistaken for carp. The Euxine Sea, and that of Azof, abound with fish: but too few fisheries are established, to supply the peninsula; on which account great numbers are, during the winter-fasts, still imported from the Dniepr. The most considerable fishery is that of the Greeks inhabiting the shore of the Bosphorus, where two species of sturgeon are caught in large numbers. Some persons have also established fisheries near Arabat; where, in prosperous years, especially in winter, the *Sandres* of the French, and the small bream, or *Wimba*, are taken in large quantities. The most productive fishery on the Black Sea is in and about the port of Akhtiar, where many naval officers permit their boats'-crews to fish with drag-nets, and amply to supply the markets. Lately, a fishery with drag-

* *Rana ridibunda*. Pallas's Former Travels, Vol. I. Suppl. p. 458. No. 14. German edit.

† *Rana vespertina*. *Ibid.* No. 15. *Rana variabilis*. *Spicileg. Zool. Fascic. VII. p. 1. Tab. 6. Fig. 3, 4.*

nets was also carried on in the Bay of Kaffa, with tolerable success; but the method, usually practised on the coasts by the Greeks and Tartars, consists in employing the round casting-net, termed by the French on the coast of the Mediterranean *Epervier*, by the Tartars *Satsma*, and by the Greeks *Pesovolo*; with which, however, few fish are taken. The most common sort, occurring here, is the mullet, or *Mugil Cephalus*, which swims in large shoals along the whole shore of the Black Sea, as far as the Canal of Constantinople; and from the roe of which Botargo is prepared. Fish of different ages advance in distinct shoals; a fact, which has also been observed in the Bosphorus, and in some parts of the Sea of Azof. Strabo has given a very accurate description of this fish, under the name of *Pelamys*; of its origin in the Black Sea; its passage through the Thracian Bosphorus; and the large draughts of it, that are taken in the Bay of Constantinople. The sea-fowl, and the small dolphins of the Euxine, generally follow its course, and might render a fishery, here established upon an extensive scale, still more productive. Similar shoals of large, and fat, delicate herrings appear in the winter; of which many thousands are caught at one time in the draw-nets. They are also taken at the strait of Tonkoi, which connects the Sivash with the Sea of Azof. A sort of anchovies (properly called *Atherina*), by the Russians termed *Byela Rybka*, or white fish, and by the Tartars *Chamssi*, arrives during the vernal months, especially in March, in such quantities, that, after the equinoctial storms, the sea-shore is sometimes in a manner surrounded with a rampart of those fish. A successful attempt has been made to cure them, like Sardinias. In some seasons, they are carried by
loads

loads to the inland towns, and are often so plentiful, that it becomes necessary, at Akhtiar, to prohibit them from being brought to market during the great fasts, lest the sea-faring people should contract fevers, by eating them too freely. Mackerel, or the *Scomber Pelamys*, are likewise caught in shoals, and are salted in barrels: they are more esteemed, and acquire a finer flavour, after having been a year in that state.

A remarkable fish of these seas is, a kind of burt or bret-fish, which is found singly, and of a large size, both in the Euxine Sea and that of Azof. Strabo mentions the capture of them in the last-mentioned sea, as well as in the two *Rhombites* of the Greeks, which have thence received their names, and by which we are probably to understand the Bays of Yei and Atshuyef.

Among the smaller fish, appearing along the coast, are three species of the *Gobius*, or, as they are called, *Buitshki*: they inhabit the interstices of rocks and stones, are very savoury, but easily become putrid: farther, the bearded gurnard, or *Mullus barbatus*; which, on account of its delicate taste, has received the name of *Sultan-Balyk*, or the sultan's fish: it is scarcely five inches in length, and is well adapted for pickling: also, six or seven kinds of well-flavoured sea-carps (*Labri* and *Spari*), among which are the parrot-fish; the sea-pike with green bones (*Esox Balone*); the variegated, long-winged, red gurnard, or *Trygla cucubus*; some small *Blennii*, &c. With the rarer kinds of fish, that are not caught every year, must be classed the *Ombrine*, and a species of small salmon, which chiefly frequents the mouth of the rivulet, near Inkerman. In both seas, the sting-ray, or *Raja Pastinaca*, is sometimes taken,

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as well as another fish of the same genus, beside a great variety of the finny tribe.

In general, the Crimea has no great diversity of insects; but many of those, with which it is infested, in some years remarkably increase. The small number of species is the more surprising; because the country yields such a profusion of different plants, and is situated in so southerly a latitude. This, however, is not a proper place to give a complete catalogue of all the insects I have observed in Crim-Tartary: let it therefore suffice to mention some of the most distinguished.

Of chafers, there are in the Crimea the *Scarabæus Moloffus*, *Silenus*, *Sacer*, *Pillularius*, and two peculiar species belonging to the same genus; the *Lucanus Cervus*, and *Capreolus*, are frequent in gardens and woods: farther, the *Hister major*, *Bruchus Pisi*, *Curculio cruciatus*, *Cerambyx Cruciger*, and *Juglandarius*; several fine *Buprestes*; a very large violet-coloured *Carabus*, which inhabits the interstices of rocks, and makes its appearance only after heavy rains, and in the night-time; a few rare *Tenebriones*; some particular kinds of *Melœ*; a peculiar small *Blatta*, residing in the mountain forests; several remarkable wingless locusts; and in general a great variety of this class, among which the *Gryllus oxycephalus*, and another with striped eyes, being nearly allied to the *Gryllus Tataricus*, are common in the southern dales; the *Cicada Orni* and *plebeja*, abundant in the same vallies; some curious winged bugs: farther, the *Mantis pectinicornis*, and several others; the *Myrmeleon libelluloides*, and *barbarum*; *Sphendon crabroniformis*; *Chrysis calens*; wild and tame bees; *Papilio Celtis*, *Hyppipile*, and *Cynara*, in great numbers; the *Sphynx Atropos*, *lineata* (though the *S. Elpenor* is

never found here), and some peculiar varieties; a few *Pha-laenae*, among which occur rare and singular kinds; abundance of *Tarantulae*; and a smaller variety, which, like the common species, carries its young brood upon its body during autumn; the *Aranea lobata*, of a silvery lustre on the upper side; and the *Aranea speciosa**; *Phalangium Araneoides*, rather scarce; *Scorpio Carpathicus* in the mountains; the pernicious *Scolopendra morfitans* and *longipes*, very frequent; the former beneath stones, and in clefts of the earth; the latter † in houses, and also under stones:— a large *Iulus* is likewise frequent between the rocks, on warm mountainous declivities; lastly, in the rivers, there are numerous well-flavoured crabs, and in the sea two species of lobsters; one of which, in summer, visits the shore during night, for the purpose of procreation, when it is taken by torch-light with the hand; but otherwise it generally resides between the cliffs; not to mention some peculiar wood-lice, both on land and in the sea, and a small blueish marine locust. — It is a fortunate circumstance for Crim-Tartary, that gnats are here uncommonly rare, and infest only the vicinity of Inkerman, in any considerable numbers.

On the Crimean coast I have hitherto observed but few Zoo-phytes and soft animals, living in the sea. Except the *Ascidium gelatinosum*, an ordinary *Aetinia*, the *Medusa aurita* and some *Nereides*; the *Alcyonium Schlosseri*, (*Botryllus stellatus*), the common *Corallina officinalis*, and some *Sertulariæ*, which are

* Pallas's "Travels in Siberia," Vol. II. Supp. p. 732. n. 97.

† The *Iulus araneoides* (*Pall. Spicil. Zoolog. IX. p. 85. Tab. IV. Fig. 6.*), which has, perhaps by accident, been described as a marine insect, is very common in the Crimea; being extremely slender, and running with great rapidity.

attached to marine plants, and oysters, no others belonging to this class occurred to my notice. Nor does the Euxine produce any curious *shell-fish*. Oyster-beds appear to exist along the whole rocky coast; but those near Kaffa afford a small species, with thin shells of various colours. At the same place, the common muscle, or *Mydia*, is plentiful, large, and well-flavoured; often containing, as already has been observed, numerous small pearls. These, with the oysters, or *Ostridia*, and the common *Petalides*, are a favourite food of the Greeks during their fasts, as also the large snails, frequent in the vineyards; beside which, nine or ten other sorts of small land-snails are very abundant in the mountainous part of the peninsula, especially one that breeds in all fallow-lands and woods, and, towards autumn, attaches itself in clusters to shrubs, and the stalks of plants. I have no where met with any rare sea-muscles; only the razor-fish, or *Solen*, of the Bosphorus, which has shorter shells than the common kind, and seems to be of a peculiar species. In some hard calcareous stones, composing the shore, there is inclosed a particular small *Pholas*; and the ship-worms do considerable damage to vessels along the whole coast.

IX.

OF THE SALT-LAKES IN CRIM-TARTARY.

I have already given my opinion, in the course of this work, respecting the origin of the Crimean salt-lakes, or *Tuzla*:
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their general nature and situation appear fully to confirm my conjecture. All of them occur on the sea-coast; and from their form, as well as the low and narrow tracts of land that separate them from the sea, they have apparently been bays; which, partly by the mass of gravel, mud, and stones, accumulated by the violent action of the waves, and partly by a former diminution of the surface of the sea, are transformed into enclosed lakes; wherein the salt of the sea-water has been crystallized by evaporation*. I will not, however, dispute, that some of these lakes may also be supplied by concealed salt-springs, though no such sources are observable in their vicinity, nor in the whole Crimean plain; while on the southern mountainous coast, where we noticed some bitter saline springs, no salt-lakes exist. It is also worthy of remark, that near the sea no salt is deposited by those lakes, which receive a running stream, and communicate with the former; such as the Kamyshlee in the neighbourhood of Koslof, and the Leeman of the rivulet Moloshna.—I shall commence with the enumeration of these lakes from the western angle of the Chersonesus, and thus follow the lower coast of the peninsula.

On the Chersonesus itself, as I have already mentioned, there are four small salt-lakes; namely, two on the extreme point of land, and two at the *Kruglaya-Bukhta*; all of which have evidently arisen from enclosed bays, and are not distinguished by any particular names.

No saline lakes occur between the mouths of the Belbek, the Alma, and the Bulganak; but, towards Koslof, we found

* Strabo justly denominates such salt-lakes "*Limnothalatta, Lacus in mare se exonerans, qui habet Halopygia (Salinas)*."

several abounding with salt. The most southern is the *Saak*, about fourteen versts distant from Koslof, and near the village of that name. It is at least fifteen versts in circumference; of a very irregular form; has many creeks; is separated from the sea by a tolerably broad, flat neck of land; and is so rich in salt, that, in productive years, not a third part of it is removed. Waggon, drawn by oxen, may advance into the lake, and be there laden with salt. The greater part of this commodity is exported, chiefly by sea, to Anatolia; and it is also stored up in large heaps, which are covered with mats. The *Saak* is celebrated in the Crimea as a medicinal lake; because persons, labouring under gouty and other chronic affections, resort to it in the summer, and immerse themselves in its mud for three successive days, as high as the neck, and are thus frequently relieved.

The large *Gnilöe*, or the Putrid Lake, closely borders on Koslof, and is disunited from the sea by a narrow isthmus, over which the post-road leads from Akmeßhet to Koslof: it is not strongly impregnated with salt, its water being only brackish and fetid; because this lake is probably supplied by contiguous springs.

To the north of Koslof, along the sea-shore, as far as the point of the Tarkhanskoi-Kut, I perceived a series of salt-lakes of different sizes; among which the *Konrat*, near the village of the same name, and fourteen versts from the town, has a circumference of six versts; the *Adshi-Bashee*, also in the neighbourhood of a village of that name, eleven versts from the former, is two versts in circumference; the lake in the vicinity of the village *Soltan-Ali*, three versts; the next lakes, *Kenegefs*, *Terekly-Afs*, and *Kerleyt*, are respectively three, seven, and

and twenty-five versts distant from Soltan-Ali; each being about five hundred fathoms in circumference. All these lakes are parted from the sea, merely by narrow sand-banks, which have formerly been thrown up by the force of the waves: they deposit abundance of salt, which, however, is partly rendered useless, on account of its distance from the roads of Koslof.

In the district of Perekop are the most important and productive lakes; from which the Governments of New Russia, Little Russia, Kharkof, and White Russia, are chiefly supplied with salt. The two principal of these lakes are situated at a small distance from each other, and are known by the names of *Staröe-Ofero*, or the Old Lake, and of *Krafnöe-Ofero*, or the Red Lake. The former lies eighteen versts from Perekop; is of an oblong form, and about fifteen versts in circumference; the latter is only two versts distant from it; likewise presents an oblong form, with many creeks at the southern extremity; and has a circumference of about twenty-four versts. Both are situated at a considerable distance from the coast, in the centre of the neck of land that disjoins the Sivash from the Black Sea; and both have in part elevated and clayey shores; it is evident from their site and the direction of the hollows or low grounds, that such lakes had once communication with the sea; and that the Crimea was formerly an island. From these two lakes, upwards of two hundred thousand, nay, even eight hundred thousand, poods of salt, have frequently been obtained in prosperous years; but, in many seasons, little salt is occasionally deposited in the Old Lake, or not till a late period of the summer; because many fresh streams fall into it; and, in the Red Lake, it happens in some seasons that none is formed, as was the case in

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in the years 1789 and 1795. In the salt thence dug out, cubical pieces, as pure and clear as crystal, are occasionally found, resembling those which occur in the rock-salt of Iletzki. The bed of both lakes is so hard, that it will support heavy waggons drawn by oxen, for the purpose of loading them on the spot. Generally, however, scarce the third or fourth part is taken out: this is partly carried away in a fresh state, and partly beaten together, in store-heaps on the open steppe, where it cannot fail to contract impurities from the dust and sand. A large waggon from Little Russia, drawn by two strong oxen, pays for the quantity it can possibly load and convey through the gate of Perekop (which is computed at about ninety poods), the sum of ten rubles: whereas a waggon-load of the dry salt (*Vagovaya-Soll*) from the accumulated stores, is reckoned only at seventy poods, and yet pays the same price. By the single pood, the salt is sold at ten kopeeks (about three-pence English for forty pounds). The *Killo*, or two poods ten pounds of salt from the lakes of Koslof, is vended to the Anatolian traders at fourteen kopeeks. This commodity is dug out of the lakes, partly by the waggoners themselves, and partly by hired labourers, or the Tartars of the adjacent villages, who are also employed on such occasions; and, like others, receive either two kopeeks for each pood, or sometimes an equivalent in salt. Formerly, the sale was under the superintendance of a Member of the Administration, and his subordinate officers: in this lucrative situation, some of them have amassed considerable wealth, within the period of a few years. Thus managed, the Crown at last derived only about one half of the revenue which is produced by the farming out of all the salt-lakes

lakes since the year 1797, when it was fixed at two hundred and eighty thousand rubles per annum.

The third of the salt-lakes near Perekop is the *Adaman*, by the Russians denominated *Krugloi-Ofero*, or the Round-Lake. It is only one verst and a half distant from the Red Lake, and about six versts in circumference. Its bottom is muddy: when salt is formed, the carriers are permitted to supply themselves with it, but no part is stored up for the magazines of the Crown.

The fourth is the salt-lake *Itarkhan*, also called *Keeyatšköe-Ofero*, from the name of an adjacent village. It is of an oblong form, extends from East to West, and has deep inlets on the southern side. Its circumference is nearly twenty, and its distance from the Adaman is three versts. This and the succeeding lakes are the most remote from the Sivash; but the former presents long creeks on the side next the Putrid Sea, which render it probable that a communication formerly existed between them. The bed of this lake is tolerably firm; though it is resorted to, only when large quantities of salt are required at one time, in order to prevent too great a concourse of people and of draught-cattle at the Itarkhan.

The fifth saline-lake is the *Kerleyt*, situated near the *Keeyatšköe-Ofero*, in a more southern direction. It is of an oblong figure; about two versts in circumference, and deposits salt in a larger quantity, and of a better quality, than that produced by the Red Lake; but its bottom is muddy.

To the East of the *Kerleyt*, and almost parallel with it, lies the great salt-lake *Kirk*, the circumference of which amounts to thirty-two versts. It is likewise oblong, from North to

South, with a narrow creek at the southern extremity, running in a northerly course. Five versts from the latter is the salt-lake *Elöaga*, which is fifteen in circumference. In these two lakes, salt is deposited only in particular years, and then not in large quantities; for which reason, as well as on account of the distance, it is not used by the carriers, but is given to the Tartars inhabiting the adjacent country.

Ten versts from the *Elöaga*, are situated the lake of *Kurshk*, which is thirty, and an oblong lake, fifty versts in circumference; near the coast of the *Sivash*, on the peninsula of *Tshungar*, and in the vicinity of the village *Keéré*. These are likewise frequented only by the neighbouring villagers, and seldom deposit any salt.

Much more important, and abounding with salt, is the lake *Jenits-khe*: it lies upon a very broad part, near the northern extremity of the isthmus of *Arabat*; is twelve versts from the *Sea of Azof*; and thirteen in circumference. It is much resorted to; and a clandestine traffic was here formerly carried on to a considerable extent. The salt, of which not a quarter is annually used, is partly conveyed by carriers into the Governments of *New and Little Russia*, and partly sent by water to *Taganrog*; being conveniently landed from the lake by means of boats.

I now proceed to treat of the salt-lakes in the peninsula of the *Bosphorus*, which are chiefly used to supply its inhabitants, and for exportation from the ports of *Kertsh* and *Kaffa* to *Anatolia*. The largest is the *Alinsköe*, also called *Aktash*, being situated near the rocky point of land termed *Kasandip*, that strongly projects into the *Sea of Azof*; and upon which vestiges

vestiges of an ancient Venetian town are still discoverable. Its distance from Kaffa is computed at about fifty, and its circumference at twenty-three versts. The lake does not deposit salt every year; and, if any be formed, it is small-grained, and difficult to be dug out. In favourable years, it is partly conveyed to Kaffa for exportation, and partly carried to the fisheries in the sea last mentioned by the boats which navigate the Don. The Alinsköe presents a few islands, and has evidently originated from a bay of the sea.

At the village of Shrik-Ali, thirty-five versts from Kaffa, there is a saline lake, measuring one verst in circumference. It is richer in salt of an inferior quality, and is resorted to only when other lakes, in consequence of heavy rains, are not productive of that useful commodity.

Tshokrak, likewise called *Miffir*, is a roundish salt-lake, upwards of ten versts in circumference, with several creeks; being separated from the Sea of Azof by a low and narrow isthmus. It is seventeen versts distant from Kertsh, at the side of a bay, formed partly by the point of land which is termed *Ufuk-Kaleffi*. Salt of a good quality is found in it every year, though not a fourth part is taken out for exportation to Anatolia, and for supplying the Government of New Russia, by means of the boats from the Don, which here find good shelter.

The *Shungulek* is situated on the Bosphorus, and has originated from a bay of the straits, as I have already stated.

Another salt-lake, denominated *Elken*, or *Itaraltshik*, lies to the West of mount Opuk. It is of an oblong form, extending from North to South; and at least eight versts in length, with a

creek at the southern extremity running in a North-eastern direction ; being twenty-seven versts in circumference, at the distance of fifty versts from Kertsch, and somewhat farther from Kaffa. Its southern point appears formerly to have communicated with the Black Sea (closely bordering upon it) by means of a small opening between eminences, but which is now closed by a narrow isthmus. It deposits every year abundance of salt, that is exported to Anatolia.

At the distance of little more than two versts from the preceding, and nearer to Mount Opuk, there is a smaller salt-lake, separated from the Euxine by a low neck of land, on which stands the village of Tufsa-Koyak. Like the Elken, it is enclosed by heights, and by the eastern contiguous mount above named ; forms several creeks towards the sea ; and is called *Ufunskoi-osero* ; being computed to be about ten versts in circumference.

The salt-lake *Katshik*, borders on a promontory of the same name, by which the bay of Kaffa is bounded on the East ; this lake is broadest towards the Black Sea, from which it is separated only by a low and narrow sand-bank. On account of the influx of fresh water, it seldom deposits any salt.

On the strand of the bay near Kaffa, lies another salt-lake, termed *Koiti*, which is divided from it only by a narrow slip of land. The salt formed in it, was first discovered in the year 1793, though it was dissolved by subsequent rains.

Of the same nature with the salt-lakes of Crim-Tartary, are those situated between the Berda and Molossinye Vody, as also on the banks of the Dniepr. For, on the borders of the Sea of Azof, along the two promontories denominated Berdänfkaya-Koffa,

Koffa, there are in the low shore several small lakes and ponds, containing salt, and which are separated from the sea by the alluvial sand. The most considerable, on the isthmus contiguous to Petroffkaya-Krepofst, are the following :

Skalkovatöe, six versts from Petroffk, and four versts in circumference.

Sudovoi, lying at a very short distance from the preceding and from the sea: it is two versts in circumference.

Grufkoi, two versts from the former, and nearly of the same size.

Krafnöe, very near the last-mentioned lake, and about three versts in circumference.

Obitöfnöe, near the second or western Berdänskaya-Koffa, fifty-eight versts from Petroffkaya-Krepofst, and not exceeding one verst in circumference. All these lakes receive large quantities of snow-water in the summer, on which account salt is rarely formed; and, though of an inferior quality, it is still employed in some of the fisheries.

Several productive salt-lakes, of the same nature as the preceding, occur on the isthmus of Kinburn. Some of them are in a detached situation, at the commencement of this neck of land, on both shores; among which is a fetid lake, closely bordering on the coast of the Black Sea: others appear in two places, on the Leeman, at a short distance from Fort Kinburn, and on the shore of the Euxine, at the point which terminates in an easterly direction. These different lakes, the salt of which was sold with great profit to the Poles, were formerly let to Count, now Prince BESBORODKO, for the annual

rent of five thousand two hundred rubles : his contract expired in the year 1795.

The salt, deposited in all these lakes, is of an inferior quality. When it is intended to be used for curing meat, with which an important traffic might be carried on to the Mediterranean, as well as for supplying the fisheries, it ought previously to be purified of its earthy and magnesian particles, by the affusion of fresh water. Many of these salts possess the well-known violet odour, that always indicates an impure state ; and some of the lakes are also distinguished by the red tinge, which I remarked in various saline waters of Siberia, during my travels in that country. The purest salt is produced by the lakes in the immediate vicinity of Perekop ; and, in some of those occurring in the peninsula of Kertsh, it is found tolerably pure, in quadrangular inverted pyramids. Since the year 1788, a vast quantity of that commodity has been obtained from such of the lakes above enumerated, as are most conveniently situated for its exportation. In that year, 842,660 poods of salt were dug out of the lakes of Perekop ; from those of Koslof, 60,000 poods ; of Kaffa, 46,890 poods ; of Kertsh, 15,380 poods ; of that in the neighbourhood of Jenits-khe, 517,495 poods ; together 1,482,425 poods.—In the year 1789, the quantity, gained at Kaffa, was 27,243 poods ; at Kertsh, 8,454 poods ; at Jenits-khe, 400,000 poods ; making a total of 435,697 poods ;—in the year 1790, at Perekop, 1,809,390 poods ; at Koslof, 12,425 ; at Kaffa, 5,230 ; at Kertsh, 164,300 ; at Jenits-khe, 300,400 ; amounting in the whole to 2,291,745 poods ;—in the year 1791, at Perekop,

270,000 poods; at Jenits-khe, 250,000 poods; together 520,000 poods: for, in the other lakes no salt was dug, during this and the subsequent year, on account of the navigation being interrupted by war. In the year 1792, the lakes of Perekop yielded 731,682 poods; those of Koslof 178,318; in all 910,000 poods.— In the year 1793, the lakes of Perekop afforded 280,000 poods; those of Koslof, 100,000; of Kaffa, 50,000; of Kertsh, as well as in the vicinity of Jenits-khe, each a similar quantity; of Berdänskaya, 740 poods; in the whole 530,740 poods; and, in the subsequent years, the produce has uniformly exceeded several millions of poods.

X.

ON THE MANUFACTURES AND COMMERCE OF THE CRIMEA.

By the emigration of the Greeks and Armenians, industry, which had not been very remarkable in Crim-Tartary under the government of the Khans, was almost extinguished; and, though this country has now been subject to the dominion of Russia fifteen years, there is a deficiency of the most necessary artizans, as well as of manufactures. Among the latter, which are still carried on, (which belong partly to Tartars, and partly to Jews or Greeks,) that of morocco-leather, at Bakhtshifarai and Karassubafar, are the most important. In the former town are thirteen manufactories, one of which is the property of
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the metshet Yani-Dsham ; and at Karassubasar, are five, where white leather, termed *Meshini*, is also prepared. There are, besides, in the last mentioned town, four others for red leather, as well as a few in Koslof. But the best manufactory is that established some years since, at a considerable expence, and upon the same plan as those of other countries, by Admiral MORDVINOF in his village of Eggis-Obo, on the banks of the Katha, where sole and upper leathers are manufactured.

The red and yellow Moroccos of the Crimea are in no respect inferior to those of Turkey, and several thousand skins are annually used, partly in the country for horse equipage, as well as for clothing the feet and legs, and partly for exportation to Russia. The best leathers of this kind are prepared only from buck-skins, which are purchased at the rate of a ruble and a half each. The inferior sorts, especially the yellow, are manufactured from those of sheep, which in a raw state are sold at the rate of seventy kopeeks a skin. — According to the most accurate information which I have been able to procure, the hides are first put into lime for ten days, and the hair is separated ; when they are immersed in lime-water for fourteen days. After undergoing this operation, they must lie nearly the same space of time in a ley, with the addition of the white excrements of dogs. Next, they are washed very clean, and covered with pounded salt, with which they remain in water for five days, and are then anointed with honey-water on the hairy side, to which the colour is to be imparted. In this pickle they may be kept from ten days to six months, according to the manufacturer's convenience, before they are dyed. The cochineal used for the purpose of tinging
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red morocco is sold in Bakhtshifarai, at from forty to one hundred rubles and upwards the ocka, in proportion to the greater or less importation of that commodity into the country. For dyeing forty skins, the Tartars take three hundred and fifty drachms of cochineal; fifteen drachms of a root called *Tzögenn*; boil these colouring drugs in one hundred ocka, or ten eimers of water; then add fifteen drachms of alum, (*Shap*, or in the Greek language *Stipfi*); and with this decoction they dye every skin eight times, each process requiring a measure that contains fifteen drachms of the mixture. Lastly, the skins are rubbed with the leaves of the *Cotinus*, or *Tabak-Yaparak*; water is poured upon them; and they are trodden together for a long time; then dried; laid one upon another; anointed with olive oil; and at length mangled and pressed; which last operations are twice repeated*. The best red morocco skins are sold, according to their size and beauty, at from three to four rubles each; though the yellow sort is considerably cheaper.

Farther, the town of Bakhtshifarai contains about sixteen workshops, where all kinds of knives, swords, and cutlery, are manufactured, and which are highly esteemed for their excellent temper; also some artizans, who prepare tolerably large felts of various colours, amounting in the whole to five thousand pieces; and felt cloaks, termed *Burki*, for keeping off the rain; such as are in use among the Circassians. The wool employed for this purpose is bought at twenty-five kopeeks the ocka; and the felts are sold at two, but the

* This process is with little variation followed by the morocco-manufacturers of Astrakhan. See GMELIN'S Travels (in German), Vol. II. pp. 165. et seq.

burki at three rubles each. In Karassubafar, some Greeks and Armenians have established a soap-manufactory, and several for making good candles. In the same town are many Armenians who make indifferent earthenware, tiles, and pipes for conducting water. Large quantities of the latter are likewise made in villages, especially in Sobla, where the clay is of an excellent quality. Sadlers' and shoemakers' work is neatly executed, especially in Bakhtshifarai. The Tartar mountaineers chiefly furnish the market with wheels of all sizes; which differ greatly in point of strength, and are awkwardly constructed.

Since the year 1793, some Greeks, especially in the vicinity of Kaffa, have employed themselves during the autumn in burning soda, or *Kallia*, in pits, from the *Atriplex laciniata* and the *Salsola altissima*. It is exported to great advantage in round masses, formed while it is melting; and, in this state, its prime cost is five rubles the *Kantar*, (440 ocka, about three poods, equal to a Vienna hundred weight.) Each hundred weight of soda requires about fifty-six Tartar cart-loads of herbs. In some villages, for instance in Aktashi-Keeyat on the banks of the Salgir, the Tartars still manufacture salt-petre; large quantities of which were formerly prepared in the Crimea; and thirty or forty thousand ockas were often exported in one year to Constantinople. They collect the nitrous earth chiefly from the heaps of ashes, or *Kurgan-Obo*, which, according to their ancient custom, are accumulated from their fire-places in all the villages of the plains, and which principally consist of the ashes arising from dung-turf. As these heaps are dry and warm, the sheep delight to lie on them in the winter; moistening
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them with their urine, and dropping their excrements upon them. Every place where sheep remain during the night, and repose after being watered, likewise affords good earth for the extraction of nitre; unless it be too much impregnated with salt. This earth is completely lixiviated in tubs, or casks of a moderate size; and is so rich, that, according to the Tartar computation, it yields a twentieth part of salt-petre, which is already provided there with its alkaline basis, and requires no farther addition of pot-ash. The second ley is again poured on the fresh earth, and boiled in small kettles, into which about sixteen eimers of the ley are gradually introduced; so that one boiling in general continues twenty-four hours. The eimer yields about two pounds of salt-petre. In its purification, the Tartars employ for each ocka the white of an egg, which is added to the re-dissolved nitre: after such process it becomes tolerably pure, and is sold at forty-five or fifty kopeeks the ocka, consequently at the rate of somewhat less than six rubles the pood. Formerly, the price is said to have scarcely exceeded two, and in Anatolia it was vended at nearly eight rubles per pood. Heaps of ashes, similar to those above mentioned, also exist even in the deserted villages on the peninsula of the Bosphorus, which might furnish large supplies of salt-petre.

When we consider the confined state of industry, the present thin population, and the scanty production of the fruits of the earth, Crim-Tartary cannot promise itself any great import or export trade; especially from its isolated situation, and its distance from the interior provinces of Russia, which abound in grain. Notwithstanding its advantageous position, with

respect to maritime intercourse, for the reasons already assigned, as well as from the mode of conveyance, being facilitated neither by internal or coasting navigation, nor by roads that are in winter passable by sledges, there cannot subsist any communication with the ports of Taganrog, Kherfon, and Odeffa, which are supplied with every article of exportation at the first hand, and in their immediate vicinity. The navigation of the Black Sea is, in general, obstructed in the winter by storms, thick fogs, and the freezing of the sails and rigging; so that no ship is permitted to sail from the Canal of Constantinople before the vernal equinox; consequently, the Crimea can derive no advantage from its ports continuing open throughout the winter. It were much to be wished that opulent merchants would establish themselves in this peninsula, and procure all the Russian commodities, such as iron, hemp, flax, masts, sail-cloth, cordage, tallow, butter, and wheat, by carriage on the Don, and over the Sea of Azof, from the cheapest markets of the interior of the empire; with a view to enable them directly to freight vessels from their warehouses, and thus induce traders to resort to the Crimean harbours. A transit-duty ought likewise to be granted; in order that the foreign commodities, imported by way of the Baltic, namely cloth, velvet, cochineal, coffee, indigo, small hard-ware, &c. might with advantage be exported to Anatolia; and the Smyrna caravan-trade be thereby reduced. The commodities which at present constitute the export trade of Crim-Tartary are chiefly salt; wheat, which in unfavorable years is procured only from the Dniepr, and from the country of the Nagays; leather; sodea; butter; some caviar and dried fish;

fish; felt; ropes; a small portion of furs, wax, honey, and Fuller's earth. Raw hides, wool, and salt-petre, which might form a considerable addition to these articles, are prohibited; and are only smuggled out of the peninsula. The importation is entirely confined to a few silk and cotton stuffs, for the use of the Tartars and their wives, who still retain an attachment to Turkish manufactures and fashions. It could not, therefore, be expected that the Crimea should derive any great advantage from the establishment of free ports; as the pasturage of its cattle on the steppes, bordering on the Dniepr, has been much contracted. On the contrary, the duty imposed at Perekop has materially incumbered the importation of grain from Little and New Russia; without which Crim-Tartary cannot possibly subsist, and still less export corn; on account of the frequent failures of crops that have occurred since its subjection to the Russian Government.

At present, therefore, the most profitable branches of exportation are the following: viz. salt, of which upwards of one hundred and fifty thousand killo are annually shipped; and wheat, amounting in some years to sixty or eighty thousand *Tshetverts*, or Russian malters, (at seven poods and a half, or three hundred pounds each,) chiefly from Koslof. Notwithstanding the prohibition, hides are also sent abroad in a considerable number. The quantity of soda exported does not much exceed one thousand poods; though it might in future be greatly increased. Butter is sold to foreign merchants to the amount of upwards of thirty thousand rubles. All other articles of commerce are insignificant, excepting a narrow, coarse, and middling Russian linen; of which about 70,000

arshines, (or 54,444) English yards,) are carried out of the country. Iron would likewise afford a lucrative object of merchandize, if a supply adequate to the demand could regularly be procured. In the year 1800, this metal was so eagerly bought-up in the ports for the Turkish markets, that the price of a pood was raised to three rubles.

The principal imports are the following: namely, raw and manufactured cotton of different kinds; silk stuffs of various patterns, and in the Eastern fashion; farther, the wines of the Archipelago, and those prepared near the Canal of Constantinople; *Sekiskaya-Vodka* *, or brandy distilled from fruit, and the lees of grapes; Turkish leaf-tobacco; and a variety of fresh and dried fruits.

The total amount of the export-trade may be computed at from four to five hundred thousand rubles, *ad valorem*; and the first of these sums nearly corresponds with the statements of the Customhouse-Registers; on the other hand, the importation may be estimated at one hundred thousand rubles below that calculation. The balance is paid, partly in ducats, but chiefly in the base Turkish silver coin, which is extensively circulated within the peninsula; and, perhaps, large sums are concealed among the Tartars. Prior to the year 1794, this money became current, in consequence of the artful manœuvres of the bankers and merchants, who principally carried on a

* The *Sekiskaya-Vodka* has received its name from the island of Scio, which the Turks call *Sekis*. It is there distilled to a great extent; though it is also extracted in other Greek islands from wine-lees, as well as from the pulp of fruits, and is sold at a low price. The farmers of the brandy-distilleries import large quantities of it, and convert it into an indifferent spirituous liquor.

foreign traffic with wheat; and availed themselves of the very high estimation in which the Tartars hold a genuine Mahometan coin: so that, even after its value had been raised twenty-two per cent. under the present Sultan, it still maintained the superiority (in exchange for small coin and paper-currency) over the Russian silver money; the intrinsic value of which exceeded that of the Turks, upwards of twenty-two per cent. The *Yüflük* (which is equivalent to two piastres and a half) had risen to one ruble and three-fourths, nay, even to a ruble and four-fifths; the *Kilik* to one hundred and sixty kopeeks; the *Altmyflük* to one hundred and fifteen kopeeks; and the *Gruush*, or *Lew*, to seventy kopeeks; but, in the subsequent years, when the exportation of corn was for some time prohibited, the *Yüflük* fell to one ruble and a half; the *Kilik* to a ruble and two-fifths; the *Altmyflük* to ninety, and the *Lew* to sixty kopeeks. As this rate still exceeds the intrinsic value of the coin, and the *Altmyflük*, according to an accurate assay, does not contain more than forty-four Solotnik and five-sixths of fine metal, and is exactly worth sixty-three kopeeks and a quarter; the Government at length, in the year 1797, fixed the value at which the Turkish coins should be received in payments; namely, the *Yüflük* at seventy-four kopeeks and a half; the *Kilik* at sixty-three and a half; the *Altmyflük* at fifty; and the *Gruush*, which is of a better standard, at fifty-five kopeeks.

Occasionally, Anatolian copper has also been introduced into the Crimea, on account of the Government. Thus, it was formerly imported for the mint there established (and which was dropped in the commencement of the last war with Turkey,

Turkey, after a quantity of metal, scarcely amounting to one hundred thousand rubles, had been coined into five kopeek-pieces) at the low prices of from three rubles and a half to five rubles the pood, and only by a smuggling traffic; its exportation being prohibited by the Sultan. At present, however, it bears a higher price, as appeared in the year 1796-7, when copper was again imported for the supply of a mint, that was intended to be erected at Kherfon.

Should the commerce of Crim-Tartary ever arrive at a flourishing state, which might easily be effected by an increase of population, and by means of a substantial privileged company, that should establish regular warehouses in the peninsula, and be supported by facilitating the exportation of goods; such commerce might be still farther extended by importing Brusian silk, Angora-goats' hair, and many simple drugs, which can be procured at a lower rate directly from the Levant, as well as safflower, madder, and saffron.

It is, however, to be hoped, that the rearing of the silkworm * in Crim-Tartary will receive more effectual encouragement; that the cultivation of the vine will be carried on to a greater extent, and be adequate to the supply of the adjacent governments; and, lastly, that, with a view to diminish the importation of foreign articles, and thus to increase the prosperity of this peninsula, spirited attempts will be made to cultivate cotton, madder, and sesamé; plants which have, by experiment, been found to flourish here, as well as on the banks of the Terek, and in the vicinity of Astrakhan.

* On this subject, see the truly patriotic remarks of the late M. MÜLLER, Counsellor of State, in the *Sammlungen Russischer Geschichte*, Vol. VII. pp. 515. and following.

The exports from Crim-Tartary to Ruffia confift of falt, which is the exclufive property of the Crown; of grey and black lamb-fkins; fheep's and bullock's hides; fheep's wool; camel's hair; Ruffia leather; yellow tanned leather; hare-fkins; wine produced on the banks of the Katfha and Alma, as well as in Sudagh, Koos, and other adjacent vallies; wal-nuts, partly of the growth of the peninsula, and partly imported from Anatolia, of which upwards of one million are annually fent to Ruffia, at the rate of from eighty to one hundred kopeeks the thoufand; hazel-nuts; apples of Sinap; fresh lemons and large oranges; together with dried fruits imported from other parts; flurgeon's backs, or *Balyki*; *Nar-denk*, or a marmalade of grapes; felts; hazel-poles, with which the Nagay-Tartars conftitute their huts; and roots of the *Crambe orientalis*, or wild horfe-radifh.

RETURN FROM THE CRIMEA TO ST. PETERSBURGH.

On the 18th of July 1794, I at length fet out on my return to St. Peterfburgh, directing my route towards Koflof; in order to vifit this ancient, bufiling, commercial town, which ftill poffeffes a confiderable population.

We followed the road leading from Akmetfhet to Perekop, till we croffed the Salgir a fecond time, after which we turned to the North-weft, and entered a perfectly level country; where, however, the entirely horizontal calcareous ftratum, abounding with oolites and teftaceous fragments, in many places appears expofed

exposed on the surface. As I quitted the banks of the Salgir, I no longer found that diversity of Alpine plants, which I had before observed in Taurida; but the uniform herbage of the steppes presented itself to my view, and continued till I reached the saline sandy tract in the vicinity of Koslof. The plants, which I was still able to ascertain, were the following:

Salvia nutans.

——- *Æthiops.*

Marrubium peregrinum.

Teucrium Polium.

Onosma echioides.

Sium Falcaria.

Eryngium campestre.

Daucus Visnaga.

Echium vulgare.

——- *altissimum.*

Statice trigona.

——- *Coriaria.*

Euphorbia Esula.

Dianthus Carthusianorum.

Scabiosa Ucranica.

Cichorium Intybus.

Artemisia Austriaca.

Achillea tomentosa.

——- *millefolium.*

Centaurea ovina.

Xeranthemum annuum.

Gnaphalium arenarium.

Senecio Jacobæa.

Carduus pumilus.

Inula odorata.

Ceratocarpus arenarius;

and, in the neighbourhood of some ancient villages, I noticed the *Peganum Harmala*, to which the Tartars attribute the property of purifying foul air: they collect its seed (by them denominated *Ueserlik*) as a purgative remedy, and export considerable quantities of it to Turkey.

The village of Tuyak, which is a post-stage, lies near two other villages. On advancing towards Koslof, we reached the salt-lake of Saak, situated to the left of the road, and bordering on the village of the same name: between it, and the

Gnilœ-

Gnilœ-Ofero, or Fetid Lake, to the right of the road, as also between this and the Black Sea (from which it is separated only by a sandy narrow isthmus), the soil is impregnated with salt, and overgrown with the *Plantago maritima*, and other saline plants. The exhalations of this stagnant lake are believed to contribute greatly to the salubrity of the town of Koslof; and on this account they are attended with similar effects to those produced by the effluvia from the Sivash at Perkop; where intermittent fevers are less frequent than in other places.

Koslof, as it has always been called by the Russians, is by the Tartars termed *Güfl-Öve* *. When the Russians took possession of Crim-Tartary, at which time they endeavoured to revive the denominations of the old Greek towns, the name of Eupatoria was allotted to this place; but the real situation of the ancient *Eupatoria* is very uncertain. The town lies at the distance of sixteen versts from Akmetshet, on a gently rising eminence, near the strand of a circular shallow bay, having a sandy bottom: hence the heat prevailing here in summer is intense, even during the night; and vermin are numerous. It may also be attributed to the same cause, that the fevers arising from sudden changes of temperature are not common. The town, with the exception of some desolate heaps of ruins, and the old fortification, is well inhabited; but is for the greater part built after the manner of the Tartars, in crooked, narrow streets, with the houses

* *Güs*, or *Gös*, signifies an eye, and *Öv* a hut; consequently a hut with an eye, or a round window. The origin of this name cannot be traced.

concealed behind the high walls of the court-yards. The late M. SAURON, a French merchant, who carried on a profitable trade from Koslof to Provence and Constantinople, has erected the best house in the place, on the sea-side, together with good warehouses, and a machine for dressing wheat. Beside thirteen Tartar metshets, and seven *Medresses*, or school-houses, the great metshet (which, next to that at Kaffa, is the largest in the Crimea, and is built after the same model,) constitutes the principal embellishment of the city. Its dome is eighteen Russian ells in diameter: on each side are three, and at the corners of the anterior façade there are two, cupolas. It is somewhat more ornamented than that of Kaffa, and likewise had two high minarets, one of which was long since, and the other but lately, thrown down by violent gusts of wind: though neither of them has been rebuilt. The town has also two vaulted baths; eleven Tartar *Khans*, or mercantile inns and halls, which are the property of the subject, and six of the Crown; two hundred and twelve shops of private individuals, and one hundred and eleven belonging to Government; twenty-four coffee-houses; eighteen bakers' shops; twenty-five coopers' and carpenters' yards; forty-five warehouses; six tan-yards; ten felt-manufactories; twenty-five taverns and breweries, where *busha* is prepared; an Armenian church; and a Greek chapel; a synagogue, and two Jewish schools; six hundred and fifty Tartar dwellings; thirty-eight Greek and Armenian houses; and two hundred and forty occupied by Jews. The whole of these are inhabited by about one thousand nine hundred male, and one thousand eight hundred and fifteen female Tartars; also by three hundred and fifteen males, and three

three hundred and eighty females, of the Jewish nation. The town-wall is in a very decayed state, and was formerly provided with quadrangular turrets. At the western and eastern extremities of the town, several mills (partly horizontal) are in motion; the number of which, including the subterraneous ones turned by horses, amounts to thirty-four. The windmills with perpendicular sails frequently have six or seven wings; and the lower part of some is constructed with masonry-work. At the west end of the town, close to the strand, a spot is appointed for performing quarantine; but the buildings for such purpose have not yet been erected. The road of Koslof is exposed to storms from all the principal points of the compass, excepting the North, on which side it is sheltered by the rising land, and by the city. On account of the considerable trade here carried on, it would be a very desirable object to establish a small secure harbour by the erection of a pier, and where ships might perform quarantine. This useful work might easily be accomplished on the elevated shore at the western extremity of the bay, near the place now appropriated to that purpose; where the water is from seven to ten feet deep. For the want of such a convenience, so many accidents happened to ships in the course of one year, that insurance could no longer be procured for vessels bound to the ports of the Black Sea, to the great detriment of the trade of Koslof; which now is, and has always been, the most important of the whole peninsula. In the year 1793, for instance, one hundred and seventy-six vessels were freighted with corn, salt, and leather; and the short route by which goods are conveyed hither by the Nagays, and the Tartars inhabiting the banks

of the Dniepr, affords the greatest facility to the corn-trade. — A greater number of tan-yards should also be here established; in order to promote the exportation of leather: in those now existing, sole-leather is manufactured, for which purpose the acorns and acorn-cups of the *Quercus Ægilops* (called *Balamut*) are chiefly procured from the Archipelago.

Koslof was formerly supplied with water by means of pipes, which conveyed it from a reservoir, established at some distance from the wall. For this purpose, it was raised out of a deep and excellent well, by the aid of machinery worked by horses. At present, however, there is scarcely a vestige of such contrivance remaining; and the inhabitants now make use of the water obtained from impure sources.

In the environs of the town, only a few gardens occur; but in these the vine thrives luxuriantly, even without irrigation. On the sandy beech grows a profusion of the *Cenchrus echinatus*, *Mefferschmidia*, *Psyllium*, *Eryngium maritimum*, and the *Pimpinella Saxifraga*, almost all of which are creeping plants.

From Koslof to Perekop, we travelled over a level, sandy steppe; and the soil of the whole Tarkhankoi-Kut is of a similar nature. The calcareous stratum still appears beneath this plain, as far as Toigaly (twenty-two versts,) and Dshalair, (fifteen versts); whence, beyond Ushum, (fifteen versts farther,) we reached the Perekop road. Between Dshalair and Ushum, the calcareous stratum abruptly terminates at a humid, saline glen, through which the road is carried over a stone causeway; and we now travelled through a plain extending to the stone bridge on the Perekop road, and the adjacent post-stage.

Here

Here is an old Russian fortification; and the distance is computed at eighteen versts from Ushum. The subsequent part of the road to that town is, during the summer, an arid, barren, and dusty level tract.

On the 27th I departed from Perekop. The post-road leads at first towards the West along the line, and then to a considerable distance along the shore of the gulf. Its banks and points of land are distinctly visible, and somewhat raised above the surface of the sea. On the steppe above alluded to, we observed the *Polycnemum arvense* and *dichotomum*, the *Salsola Kali*, and sometimes the *S. Soda* and *sedoides*, growing in profusion. After travelling thirty-two versts, we arrived at Kalantshak, where Prince POTECHKIN has erected a respectable palace, which was embellished with six adjacent buildings, but is now in a ruinous state. In this place are several deep and excellent wells; it is surrounded with a regular fortification, defended by bastions of earth, and there are two buttresses for a wooden bridge: on the opposite side is a stone bridge over the rivulet Kalandshak. The next stage is Kopanki (thirty versts); ten versts farther, after passing a village of colonists bearing the same name, we reached Kastagrifova, another village occupied by new colonists (twelve versts), and situated near the vale of Karavaika, which is encompassed by a sandy glen. Next, we travelled through a district, containing accumulations of drifted sand, and extending to the village of Oleshki (eighteen versts): here flourishes the *Salix incubacea*, a species of procumbent willow with red twigs, growing in small bushes not unlike those of the birch; and which is probably a remnant of the *Lucus Achillis* mentioned by STRABO.

The *Carduus cyanoides polyclonos* grew here in a very peculiar manner, with lanceolated leaves, having scarcely any divisions; and forming red wings along the stalk. The *Arundo arenaria*, *Onosma echioides*, and other plants that delight in a sandy soil, were also frequent. This tract continues along the Dniepr, as far as the intrenchment of Shuriefkoi, and to the isthmus lying in front of Kinburn.

Oleshki, the name of which is perhaps derived from the ancient Heleniopolis, is a large village, consisting of two hundred and seventy-five houses, situated on an elevated steppe, contiguous to the marshy ground forming the low banks of the Dniepr. Under the jurisdiction of the same superintendant, six other villages have lately been established in its vicinity; namely, Bolshye Kopani, comprising ten; Kardashina, twenty-five; Kastagrifova, six; Tsharburdi, ten; Radenfkaya, and Malye Kopani, each containing six houses. The number of males in all these villages amounts to nine hundred and sixty-four; and we found new settlers, still employed in erecting villages on the road from Perekop to Berislav; and which will receive the names of Tshapli and Tshernaya Dolina.

In the environs of Oleshki, the Syetsh of the Kozaks of Saporogi was formerly situated, about twenty-eight versts from the beginning of the Leeman of the Dniepr, and thirty from the first of the Kinburn salt-lakes.

The passage from this place, over the Dniepr, to the town of Kherfon, is performed in ferry-boats. From the nearest arm of the river, termed Tshaika, we passed into the Konkaya; thence into the Gnilusha; and, lastly, over the Dniepr itself, which is somewhat less than one verst in breadth. The whole

low

low country is marshy, and covered with tall flags; and the distance from Olefki to Kherfon amounts to eighteen versts.

Kherfon, founded under the glorious reign of the Empress Catharine, since the peace of 1774, is situated upon an elevated dry plain, on the right bank of the Dniepr: it commands a view of the broad rushy fen. When the wind blows from that quarter, it receives a considerable portion of pernicious air during the summer. The town consists of the fortrefs; the military suburb situated above it; and of the city, inhabited by burghers; and which is built upon a gently rising plain, farther down the river. Within the fort stands the principal church, which is a beautiful edifice: at a short distance from it is the obelisk erected to the memory of the Prince of Wirtemberg, of General Müller-Sakomelski, and of Korsakof, General of Engineers. In the church itself are deposited the remains of Prince ПОТЕМКИН. The citadel also contains the arsenal, the admiralty-wharf, and the house of the Commandant. The lower town is regularly planned, and embellished with two churches; beside which, a beautiful new one was building at the time of my visit. Between the lower town and the fortification, there is an extensive esplanade, planted with trees, which have not perceptibly increased in size during the last ten years. Among the inconveniences, to which this town is exposed, I shall only notice the dirt prevailing in the winter, and the insupportable dust, clouds of which are wafted about in every direction, during the summer; not to mention the innumerable swarms of gnats, that infest it from the marshes. The total want of wood is supplied by beams of good pine-deal,

deal, which are floated from the upper district of the Dniepr, and are sold at the rate of one ruble each.

The commerce of this place is carried on, either by way of Otfhakof and Nicolaef, or from the Glubokinſkaya Priſtan, to which place the largeſt veſſels are navigated up the current of the river. Its exports conſiſt chiefly of wheat, hemp, ſail-cloth, and linen; and, if more wealthy merchants ſhould ſettle at Kherſon, it might, in the courſe of time, become a very important place. Siberian ivory has alſo, for ſome years paſt, been ſhipped from this port.

The communication from the upper diſtricts of the Dniepr, would be far more advantageous to the commerce of Kherſon, if the cataracts, occaſioned by the ſtratum of granite by which it is interſected, and the rapid ſtreams occurring in rocky places, did not interrupt the navigation of the river from Kaidak to the vicinity of Nicopol. Theſe cataracts, for the removal of which the Crown has already diſburſed, and is ſtill expending large ſums, (though they have hitherto been avoided by land-carriage), admit only of timber being floated down the ſtream at high water. The number of ſuch places, as are more or leſs dangerous, and ſome of which produce a ſlight fall of water, while others have a rapid and confined current, amounts in the whole to twelve; namely, Kaidatzkoi, Sarſkoi, Lokhamſkoi, Svonetz (one of the moſt conſiderable); Knäginetz, Nonaſſitetz (the moſt dangerous, as it cannot be paſſed by empty veſſels); Volnyſh, Voronova Sabora, Budylſkoi, Lytſhnoi, Tovolfhanoy, and Volneey. — The tract of granite, which here conſtitutes the rocky banks
of

of the Dniepr, and forms a bed full of cliffs, is the same which proceeds from the regions between the Berda and Moloshna ; passes along the old line, and the Konkaya, through the Dniepr ; and crosses the Ingul at Elizabeth, and the Bug at Sokoly ; being perceived as far as the district of Tumbaffar, or Dubaffar, on the banks of the Dniestr ; where it very distinctly appears as part of the Carpathian mountains. It is highly probable, that this bed of granite would, at some future period, discover a valuable ore, if proper persons were commissioned to examine it with accuracy.

On the 25th of July, although the heat was almost insupportable, I proceeded on my journey from Kherfon, over gently rising steppes, through Byela-Tzerkov, or White Church, twenty versts ; then to Kopenka (fifteen versts), where all the water was evaporated ; and arrived, in the night, at Nicolaef, which lies thirty versts farther.

Nicolaef would become one of the handsomest and finest towns of the empire, if the erection and embellishment of it were continued with the same spirit, with which they were commenced. So late as the year 1791, the building of this place was first undertaken on a desert spot. In the year 1792, Mikhailo Leontièvitsh Faleeyef, who was commissioned by Prince POTEMKIN to form the plan of the town, erected upwards of four hundred and fifty houses. In the following year, scarcely any progress was made ; but, in 1794, by the activity of Admiral Nicolas Semenovitsh Mordvinof, the number of dwellings had already increased to seven hundred ; and the town gradually became more extensive, as the Admiralty was removed hither from Kherfon.

This town is situated in a fine plain between the Ingul and Bug, which unite at its extremity in an angle, formed by the latter, whose current flows from West to East. The market-place, together with the most handsome buildings in the town, extends along the Ingul; and above it appears the Admiralty. The rest of the houses are disposed in regular and spacious streets, forming perfect squares. The finest edifices stand round the market-place, and consist of the church, which is built in a modern style of noble simplicity, and is internally decorated with equal correctness of design; its sanctuary representing a temple, supported by eight pillars richly gilt, and embellished with fine paintings;—farther, of the town-house, with two elegant colonnades at the wings, one of which serves for the exchange; of the mercantile hall; the house of the Jew contractor, Borech; that of M. Faleeyef, erected in the Moldavian taste; the mansions of Admirals Mordvinof and Ribas; as well as of the dwelling of M. Dauphiné, a merchant; the last of which is constructed of a calcareous stone, supposed to contain silver. The Admiralty forms a large and closed square, next the fields; and the wharf lies opposite such a curve of the river, that vessels, launched from the stocks, immediately descend the Ingul into the Bug. It is to be regretted that this place is destitute of good water; which, in consequence of sea-winds, becomes brackish; so that this necessary fluid, if required for drinking, must be procured from the fine springs in the garden belonging to the manor of Spaskoi, which is situated on the banks of the Bug, at the distance of two versts. There is an excellent opportunity of establishing kitchen-gardens and orchards in the adjacent rich
low

low grounds. Willows and poplars flourish in this soil, and ought to be planted in numbers; because the whole country is entirely destitute of wood.

The pleasant estate of Spaskoi (which was first laid out by a person of the name of Fabré, but afterwards transferred to Prince POTEMKIN, by whom it was beautified) is situated to the west of the town, upon a sandy declivity towards the Bug, where copious springs of the finest water occur. These have been collected into an elegant fountain, encompassed with stone, close to which is a bath, erected in the form of a temple, together with a cold and a shower-bath: in the garden are planted vines and fruit-trees. The eminences between this estate and the town afford a delightful prospect of the latter, and over the surrounding country to the distance of twelve versts, as far as the village of Bogoyavlensköe, which is likewise built in the vicinity of springs, and is embellished with a pleasure-house and garden. The whole angle, between the Ingul and Bug, contains a stratum of calcareous stone, interspersed with shells; of which fossil the houses in Nicolaef are constructed; and this stratum extends westward, across the Bug, into the country of the newly erected sea-port town of Odeffa.

The banks of the Bug, below the town, are also remarkable for the remains of Greek antiquities there discovered. About twenty versts down the stream, opposite to Kislatofka (a place situated on the right bank of that river, near which occurs a small salt-lake, and where the Kozaks of Saporogi formerly had a fishery) between the defiles of Volkaya and Shirekkaya,

there are still observable some vaults and ruins; being the vestiges of a Greek town. According to the discovered coins the obverse of which generally represents a head with a wreath of laurel, and the reverse a vulture (some of them having the inscription *Olbiopolis* in very distinct characters) we ought to search here for the true remains of the Milesian colony of Olbia.

On the fifth plate, *Fig. 1. 2. 3.* I have caused three of these coins to be engraven. In the same place has been found the key-stone of an arch, about twenty-eight inches in breadth, with a Greek inscription represented in *Fig. 4.*, and which is now deposited in the church at Nicolaef: here also is preserved a large plate, with the bas-relief delineated in *Fig. 5.* of the eighteenth plate, which was discovered somewhat lower down, near Tzarä-Kamyshi, where it served the mariners for laying hold of with their boat-hooks, and has thus been greatly injured. On approaching towards Nicolaef, a little below Dolgaya Koshka, some remains of another ancient inhabited place are said likewise to exist.

Professor AFONIN, who resides at Nicolaef, has kindly communicated to me the description of several antiquities, that were formerly found in these ruins of Olbia; and of which I shall here insert an account.

1. A medal, having a sun on one side, and, on the reverse, a vulture, or eagle, with half-expanded wings, at the feet of which is a fish; but it has no inscription.
2. A coin, with a bust on one side, which probably represents Apollo; from whose mouth, as in *Fig. 1.*, proceed the
the

the letters Δ and \varkappa (*Uk*), which apparently denote a syllable of imprecation : on the reverse is a vulture with the inscription : $\text{IEPA } \Theta\text{EO } \text{A}\Pi\text{O}\Lambda\Lambda\text{O}\text{H}\text{O}$.

3. A medal, having on one side a head, likewise crowned with laurel, and on the other a tree, the roots of which are twisted together, and on the branches of which a bird is perched, with the inscription : $\text{O}\Lambda\text{BIAPIBE}==$, that is ; Olbia, arife.
4. Another medal, with a head on one side, and an illegible inscription on the exergue : on the reverse, the impression is effaced.
5. A coin, with a head on one side, and the inscription : $==\text{METAN}\Delta\text{OY}==$. On the reverse it has a vulture, slightly hovering with its wings ; the left of which exhibits a Δ , and the right an arrow, with the inscription : $==\text{O}\Lambda\text{BIO-}\Pi\text{O}\Lambda\text{ITIKIN}==$.
6. An earthen sepulchral lamp, with the figure of a dog running. It is reported that the modern Greeks still burn such lamps (*Lichnarion*) during the night, in a receptacle attached to the tombs.
7. A piece of marble of a moderate size, in the centre of which is represented an owl, the symbol of Minerva ; and behind it, on both sides, are two guards with axes in their hands.

At a short distance from Nicolaef, a colony of Turks was established, under the superintendance of Sallin Aga, who had been a favourite of the noted Hassan Capitan Pasha ; and who, after the decease of the latter, had remained under the protection of Russia. But, as this colony could not be supplied with

females, either from the Crimea, or from other parts, it was in the year 1800 removed into the district of Karassubasar, in order to afford the male Turks opportunities of entering into marriage.

The gangrenous ulcers, a species of the venereal disease, so frequently observed in Siberia, and here called *Tsholtshak*, are said occasionally to appear, in the summer, among the inhabitants of the banks of the Bug and Ingul.

On the 26th of July, in the afternoon, I continued my return from Nicolaef. Towards the source of the Ingul, there are rising steppes, uniformly high, and diversified with pleasant vallies. After travelling twenty versts, we arrived at the village of Kadilofka; and again twenty-two, which are rather under-measured, at that of Mikhailova. Near the village of Chrenova, we passed a wretched bridge over the Ingul, after which we proceeded on the right bank of that river to the Lekkerkoi-Tractir, a post-house belonging to a Surgeon of the Staff, who here possesses an estate. Twenty versts from this place, and in the vicinity of Tkatsjik, we crossed the Brook Gromoklea, which flows into the Ingul, and which here forms a confluence with another rivulet, where hard calcareous strata are exposed to view. The proprietor has established a fine stud of horses; and the grain is here preserved under ground. Twenty-five versts farther, we reached a village belonging to Count Witt, occupied by refugees, and situated on the banks of the Gromoklea: we now traced its
current

current towards the source; along its banks, as well as on their surface, layers of granite are discernible, and mixed with red spath. These strata run in a direction from North to South, sometimes precipitately decline towards the East, and are occasionally inverted. Each bed is from one span to three feet six inches in thickness, and consists of the most perfect primitive granite, being a continuation of that mineral tract which causes the cataracts of the Dniepr, and occupies the district between the Berda and Moloshnye Vody. Near the villages of Gromoklea and Suyaklea (each twenty-five versts) the rocky layers on the banks of the rivulet were composed of a coarse-grained granite, intermingled with a large portion of pale feld-spar, likewise disposed in strata running from North to South, and standing inverted. A peculiar perennial species of *Clypeola*, with yellow flowers and grey leaves, was here frequent upon the rocks, as well as on the soil adjacent to the cataracts of the Dniepr. Somewhat to the left of our road, lies the pleasant village of Gregoriefka, the property of Major Berends, on the banks of the rivulet Kamyshvata. Above that place, I saw a quarry of granite, in which occur thick strata of quartz, intersected with layers of feld-spar, and resembling veined wood. Still farther, on the upper banks of the Kamyshvata, white porcelain-clay is dug on the estate of Major Titof; it is mixed with particles of quartz and fine mica; being very similar to granite decomposed by the atmosphere, and from which the Bristol porcelain was formerly manufactured, after its constituent parts had been washed, and the quartz reduced to an impalpable powder. Near the rivulet

Vshivaya

Vshivaya (fifteen versts), I regained the post-road: here is situated a miserable village, at the distance of twenty-five versts from Suyaklea; and from this place it is only twenty-two very short versts to St. Elizabeth. The herbage of this beautiful, and in general very productive steppe, was entirely burnt up by the heat of the present summer.

Elisabet-grad, formerly called the fortress of St. Elizabeth*, was a frontier town against the Crimean Tartars, and one of the principal cities of New Servia: it was peopled, under the reign of the Empress Elizabeth, with various colonists from Moldavia, Servia, and Hungary; and, as late as the year 1769, suffered from the incursions of Krymghirei-Khan. Since the Crimea has been in the possession of Russia, these fertile districts have enjoyed a happy state of tranquillity. The fort of St. Elizabeth is surrounded with an uniform mound of earth, strengthened by six bastions, and by dry ditches on the west side of the Ingul: it is provided with wells, a church, a house for the Commandant, and with barracks. The town has five churches; is built on both banks of the Ingul, towards the East and North of the fortification, with streets regularly disposed in a longitudinal direction; and is, on its western side, intersected by a deep glen for carrying off the rain-water. Farther, upon an eminence eastward of the Ingul, there is a small suburb, containing a wooden church, and thirty-two windmills. In a cleft to the North-east of the town, on the opposite side of the Ingul, a fine white clay, mixed with grains of quartz and

* See *Güldenstädt's Travels, (in German,) Vol. II. p. 175,*

a silvery

a silvery mica, is obtained in large accumulations : this fossil greatly resembles feld-spar in a decomposed state ; is found in a bed of yellow sand ; and is used for the purpose of white-washing houses.

The post-road continues for twenty versts, to Adshamka, a village consisting of four hundred houses ; embellished with a church ; it is built on the banks of the Ingul, in a pleasant valley, situated between eminences, and in the vicinity of wells ; being inhabited by the former regiment of pikemen of Elisabeth-grad. We next reached Petrikofka (twenty-six versts), a Sloboda of six hundred houses, lying in a sandy vale, through which the Beshka flows in its course towards the Ingul. Twenty versts farther we arrived at Alexandria, a similar country town ; which, according to the regulations then subsisting, was one of the principal places of a district. Here we crossed the Ingul a second time ; and, after travelling twenty-seven versts, we entered Svätina Balka. The steppe now becomes hilly, and is intersected with deep glens ; some of which are covered with brushwood, and are connected with each other. On the sides of steep banks, we occasionally met with granite ; and our attention was excited by some remarkable hillocks resembling fortified works ; and accompanied by barrows. — At a farther distance of twenty-two versts, lies the populous town of Krementshuk, which is regularly built, and very advantageously situated for commerce, on the banks of the Dniepr. We crossed that river over a wooden bridge, nearly four hundred fathoms in length : the streets of the town are boarded with planks ; a proof of the abundance of fir-timber,

which is floated down the Dniepr, from its upper banks in White Russia. The traffic, carried on with this article, as well as with corn, constitutes the most important branch of the trade of this place. As we arrived here in the night, and proceeded on our journey early the next morning, I cannot enter into any detail with respect to the flourishing state of Kremenshuk.

The road now leads through extensive, sandy, low grounds on the banks of the Dniepr, which are interspersed with willows and various other trees; and where the river appears to have completely intersected the stratum of granite. Immediately behind Potok (eighteen versts), we ferried over the Pfall, which falls into the Dniepr, at the distance of ten versts from this place. Beyond it, the low country is impregnated with salt, and produces abundance of *Chenopodium maritimum*, *Camphorosma annua*, *Arenaria maritima*, *Salicornia herbacea*, and Orache. We then passed over uniformly fertile plains, through Gorbanovy-Khutery (eighteen versts) to Tshetshina (sixteen versts); where we crossed the Vorskla. Next, we proceeded to Kobylaek (sixteen versts), a neat town of Little Russia, consisting of one thousand four hundred houses, and having ten churches: a school has here been lately established, and the place contains many elegant dwellings. It is situated in a charming plain, on the banks of the Vorskla, and is adorned with gardens. On the road thither, I was delighted with the excellent level meadows, enclosed by ditches, and embellished with fine plantations of willows; which belong to Major GANSHA, a retired officer residing in Kobylaek,

and whose example justly deserves to be imitated. The advantage, resulting from this œconomical arrangement, was amply evinced by the numerous hay-ricks, which I saw in so dry a year. I was assured that the current of air, occasioned by the trees, produces such an effect, that no humid cloud passes over his land, without showering down its blessings.

The remaining stages to Pultova, namely, Novye-Senshari (twenty-seven versts), Gergelef-rog (sixteen versts), and the last twenty over a low ground, extending to the Vorokla and the fine elevated plain interspersed with brush-wood (where the place, on which the ever uemorable battle was fought between the Ruffians and Swedes, is distinguished by a prodigious monumental hill), I performed on the 1st of August, during continued rain; and late in the evening arrived at the town, celebrated for that victory, which laid the foundation of Ruffia's present greatness. Every person, who surveys the indifferent earthen fortifications of this place, must be astonished that such a commander as Charles XII. should have hesitated to attack a town, in which the memory of his disaster, so prolific in consequences, is now preserved by a columnal tower erected near the beautiful church of Voskresienski; and on which is exhibited a cast-metal plate, representing the battle.

Here I conclude the description of this journey, on my farther return, by the way of Akhtyrka, Sumi, Mtlhensk, the fine towns of Kursk, Orel, and Tula to the city of Mosco: I was induced thus abruptly to terminate my observations; as, beside these handsome towns, now rebuilt according to a modern plan, few remarkable objects occurred on my route; and, because the road from Mosco to St. Petersburg (where I arrived on the 14th of September) has been repeatedly described. — A view of the large hillock near *Bronnitza* forms the subject of the fourteenth Vignette, at the end of this volume: notwithstanding its considerable size, that eminence appears to have originated from human labour; and I have given an account of it, in my former Travels.

* * *

“ In order to contemplate a remarkable object, I tarried here several hours: I allude to the very steep round hill, called Bronnitzkaya-Gora. It is situated on the south-western side of the village Bronnitzkoi-Yam, concerning which various stories are related; but it would be needless to repeat them. The prospect from this eminence over the surrounding country, as well as the lake Ilmen, is very extensive. On its summit are two springs; which, though small, deserve to be mentioned on account of their situation. One of them is inclosed, and near it stands a house, which is now in a state of decay; whereas the other lies exactly on the top of the hill, appearing like a puddle overgrown with aquatic plants; and by the side
of

of it is erected a wooden chapel. The former of these wells occurs on the southern declivity of the hill, and is scarcely six feet in depth: the peasants ascribe medicinal virtues to its water; though, like many other springs in high repute with the vulgar, it is merely a pure and limpid stream. The whole hill was embellished with variegated flowers; which, together with the dwarf-elms growing on its upper surface, contributed to give it a pleasing appearance: hence it is a favourite resort of young country people on festival days. The plants, flourishing here, evince their vegetation and subsequent decomposition to have been attended with some elevation and change of soil, as well as of the vegetables. The *Chrysanthemum Leucanthemum*, and *Succisa*, are very frequent; and on the south side of the hill, the *Scleranthus annuus*, and the odoriferous *Anthoxanthum*, were in blossom.

“ Like the surrounding country, the Bronnitzkaya-Gora consists of a loamy soil: on its lower part are scattered many prodigious flag-stones, which are composed of a reddish feld-quartz, interspersed with a black blende, in the manner of granite. Numbers of them have already been split by explosion, and conveyed to the capital; as they afford excellent materials for building: nevertheless, several are still observable, which measure seven feet and upwards in diameter. The largest of these stones was found at the foot of the hill, near the road; and, according to the cavity it has occupied in the ground, it must have measured more than twenty-one feet in diameter. Is it, therefore, probable that such rocks could have been carried thither by the force of the water, as is
VOL. II. generally

generally asserted? Or, must the origin of all the granitic field-stones (which are frequently found of the largest size) rather be accounted for in a different manner?" PALLAS'S *Travels through different Provinces of the Russian Empire*. Quarto. St. Peterburgh, 1771 (in German). Vol. I. pp. 5 and 6.





MAP of the STEPPE
 between the
 LOWER VOLGA and the DON;
 Where the CASPIAN SEA was formerly
 united with that of
 1706.

ELEVATED PLAIN THAT FORMERLY COMPOSED THE BANK OF THE CASPIAN SEA

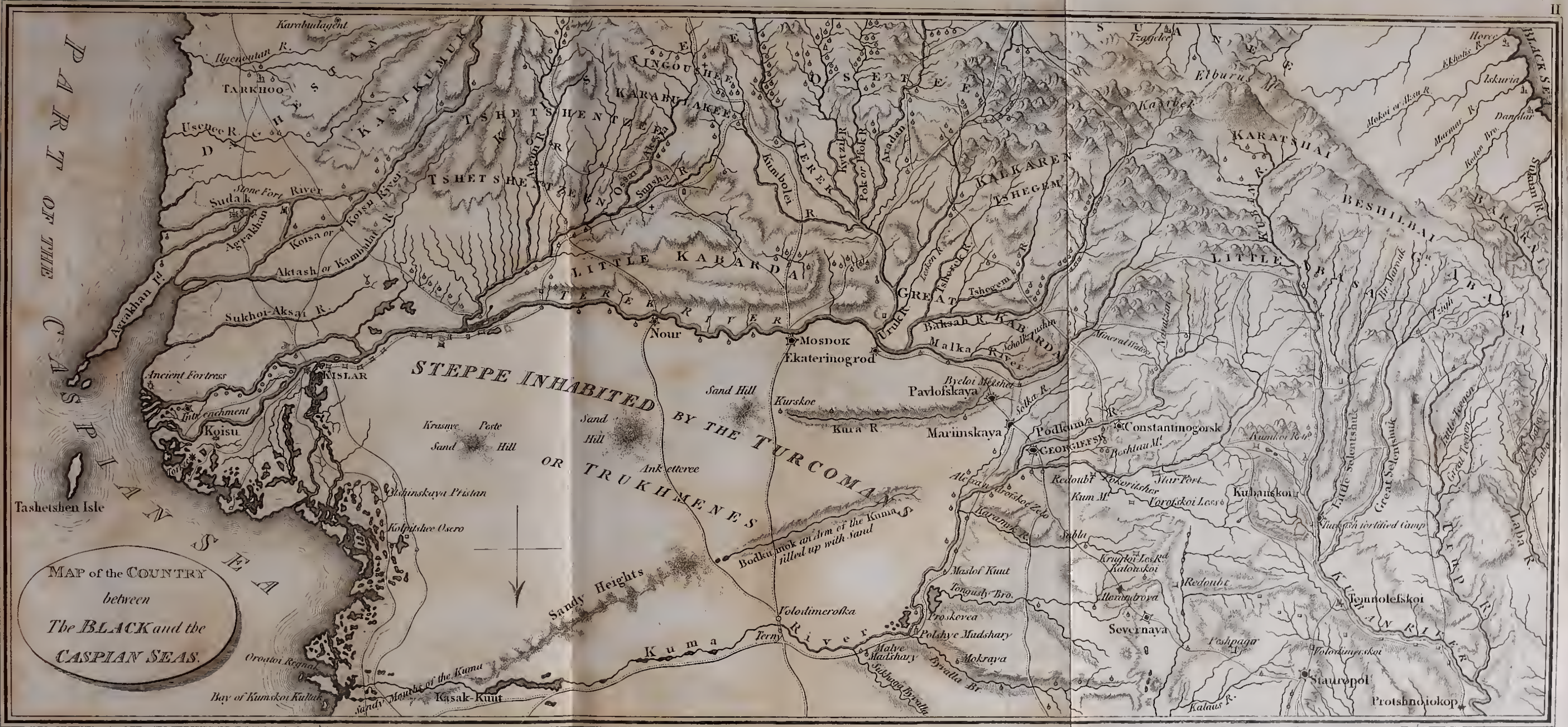
ENCAMPMENT OF THE KALMUKS

WINTER CAMP of the KIRGHIS

THE CASPIAN SEA

J. Russell, fecit.





PART OF THE
CASPIAN SEA

MAP of the COUNTRY
between
The BLACK and the
CASPIAN SEAS.

11





20 40 60 80 100
 Scale of 100 Versts
 for Maps I, II, III.



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