

torrents; and the mud was so deep, that we did not attempt to gratify our curiosity. The people at *Hæberg*, told us that it was about an *English* mile distant, and yet we heard distinctly the noise of its falling waters. This cataract is called *Føn Fossen*. They said that passengers seldom went to see it; which is probable enough, in a country where the grandest cataracts are things of common occurrence: but it is to be hoped that some future traveller, under more favourable circumstances, will not leave this water-fall unheeded. In going from *Hæberg* to *Ous*, we found the soil sandy. The inn at *Ous* was excellent, and the accommodations not inferior to those of *Christiania*; which is saying a great deal. We seemed to have escaped from the mud the moment we quitted *Hæberg*; for the road afterwards was very good. Here we observed some hardy urchins, with naked legs, amusing themselves by playing in a bog, totally regardless of being wet or cold. The distance from *Ous* to *Sindby* is only one *Danish* mile: we ran it in forty minutes. Near *Sindby* is a mountain containing iron-ore, and also a foundry. The road was crowded with peasants, going to the fair at *Kongswinger*. There was a fortress situate upon an eminence above *Kongswinger*, which commanded the village, the road, and the river.

CHAP.
IX.

Appearance made
by a Fair
at Kongs-
winger.

We were much entertained at this place, by the sight of the fair. A public fair, by collecting the inhabitants of the neighbourhood, and exhibiting them in the height of their gaiety and costume, cannot fail of being interesting to the curious traveller: it also serves to display the produce and commodities of the country. We bought here ptarmigans and moor-game, besides white bread and gingerbread. The dress of the men was singular, from its uniformity: they wore coats of white cloth, faced with red, and red cuffs; and red caps upon their heads. Many of the men were already more than "half-seas-over," though it was an early hour of the morning. There were many horses for sale, rode by rough-riders. For the rest, the appearance was pretty much that of an *English* fair—soldiers enlisting for recruits, and alluring the boors by a display of their martial accoutrements; drunken loobies; pretty village-lasses; clamorous hawkers; and vagrant *Italians*, with cheap looking-glasses and coloured prints.

Money of
the country.

Payments are made in *dollars*, *schillings*, and *stivers*; but in *Sweden* and *Norway* the value of *schillings* and *stivers* is very different. In *Norway*, a *schilling* is the lowest coin, and answers to our halfpenny; and *stivers* are a penny each. In *Sweden*, *schillings* answer to our pence, and

stivers to our farthings. All small sums are reckoned in *stivers*; and instead of saying, for example, 'four *schillings*,' they would say 'sixteen *stivers*.' A *dollar*, silver mint, equals eightpence; and there are six in a *rix-dollar* note. The general price of *barley* and *rye*, in this country, is from four and a half to five dollars the ton. *Barley* was now selling so high as nine dollars, and *rye* at ten dollars, per ton; owing to the dearth which had happened, and the effects of which were still felt. The price of labour was twelve *schillings* a day, without victuals.

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After we left *Kongswinger*, the aspect of the country was more like the grand and striking scenes of the *north of Norway*; presenting a landscape perfectly picturesque, when viewed as a whole; yet consisting of an amazing variety of parts, all of which, when examined in detail, were magnificent. There never was but one painter of sufficient capability, as the historian of Nature, for the representation of things so varied and vast in their combination—and this painter was *Claude*. But for the country here we would rather have called in the aid of *Gaspar Poussin* than of *Claude Lorrain*. It had more of the majesty and sudden transitions which mark the favourite subjects of *Gaspar's*

CHAP.
IX.*Edsbroen.*

pencil, than of the long drawn valleys, the never-ending richness and sweetness, of *Claude*.

Magnor.

At *Edsbroen*, a single house, almost as wretched as the shed at *Malmagen* where we passed the night upon coming from *Sweden* into *Norway*. We were however induced to halt for dinner, upon finding in the Post-book, in the handwriting of our friend Professor *Malthus*, the words "good treatment." He had passed this way, with Mr. *Otter*. The good woman of the house was moreover tidy in her appearance, and brought forth some excellent butter. To this we added our bread and cheese, and so made a hearty meal. From hence we had good roads to *Magnor*, a strange-looking place, consisting of a parcel of wooden-houses, huddled together under a mountain. We found nobody at home: all the inhabitants were gone to *Kongs-winger* fair. We therefore proceeded farther; and came to an inhabited dwelling, where we found an old woman in bed, who from the age of nine to sixty-nine had been always bed-ridden. Our host was her nephew, and had himself seven children; but for many years, with a degree of tenderness amounting to a filial affection, he had attended upon and solaced the infirmities of this poor afflicted invalid. In the next stage, between *Magnor* and *Morast*, we

passed from *Norway* into *Sweden*, at the distance of half a *Danish* mile from *Magnor*. An avenue cut through the forest marks the boundary between the two countries. Just before passing this boundary, hearing somebody calling behind us, we halted. It was the identical peasant at whose dwelling we had stopped, and whose charitable conduct we have noticed. He had galloped after us with a pocket-book, containing a considerable sum of money, which we had left upon his table; having taken it out to bestow something upon his poor family. A very little more speed on our part, or less of diligence on his, and we should have been out of his reach: and if this had been the case, few readers would regret that such singular honesty, in the midst of such poverty and goodness, had met with a larger reward than we could then afford to bestow. It was not the first symptom which we have had to notice of our approximation to that land of honesty, SWEDEN: and whether the individual we have alluded to were a *Norwegian* or a *Swede*, we are well assured, that, beyond the limits of these two countries, similar instances of regard for the distinctions between 'mine' and 'thine' will not be always so scrupulously regarded. At the place where the avenue has been cut, a stone is erected, which

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IX.

Boundary
between
Norway and
Sweden.

Singular
instance of
honesty in
a Peasant.

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IX.

exhibits on one side of it the arms of *Denmark*; and on the other, those of *Sweden*: and about a quarter of a *Swedish* mile farther ~~on~~, before reaching the end of this stage, there is the Gate and Custom-house on entering the *Swedish* territory.

Morast.

Finding no accommodation at *Morast*, the next relay, we proceeded, chiefly amidst woods of red fir, with a few openings of cultivation, through *Haga*, to *Strand*; where we arrived at midnight; being guided in the woods by peasants on foot, carrying flambeaus made of deal splinters. The inn at *Strand* was bad indeed; but the truth is, that between *Magnor* and *Carlstad* there is no place of rest for travellers which can be called by the name of an Inn: they are wretched hovels, tenanted by the poorest peasants. At *Strand*, a whole crop of cabbages was hanging from the roof, to dry.

Haga.
Strand.Homeric
Torches.Extraordi-
nary Cos-
tume of the
Natives of
Wermeland.

Upon the first of *November*, we left *Strand*, and set out for *Prestbol*. The dress of the natives exhibited a curious change, as we entered the province of *Wermeland*. The peasants were all in black, as if for a general mourning; and this costume, added to their poverty and the sterile aspect of their country, had a melancholy appearance. We hardly entered a house without seeing some lamentable object, either

sick or deformed. The soil itself is of a nature to bid defiance to cultivation: it consists of loose masses of stone, which can neither be removed, nor rendered in any way productive. It seemed to be the very region of poverty and despair, denuded and smitten by the hand of Heaven. In perusing the manuscript journal of a friend who had travelled the same route only three months before, we found similar observations made as to the melancholy aspect of all this district, and to the impressions made upon his mind upon seeing all the inhabitants dressed in black clothes. When we entered Sweden from Denmark, we were struck with the superior liveliness of the Swedes; but in entering it now from Norway, we received a very different impression. To add to the general wretchedness of the country, a greater dearth had prevailed during the former winter than the oldest person ever remembered. Oats were six dollars a ton, which commonly sell for two or three. Barley and rye were scarcely to be had at any price. The people had saved themselves from starving, by eating the bark-bread, and a bread which they said they made of a kind of grass: this grass we afterwards found to be sorrel¹. The fir-bread had given to many

Aspect of
the Country.

Consequences of
a recent
Dearth.

(1) *Rumex acetosa*.

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IX.

of the inhabitants an unhealthy appearance: they found the sorrel-bread, upon the whole, more salutary. The general effect of eating fir-bread is, to produce a yellow, pale, and unhealthy countenance. In every thing, the appearance of the people was strangely contrasted with that of the *Norwegians*. The latter wear red caps. The *Swedes*, in their broad-brimmed hats, without any buttons upon their black coats, looked like so many *Quakers* in mourning.

Hogvalla.
Leerhol.

Skamnäs.

Improved
appearance
of the land.

Presently after leaving *Strand*, we had a fine view of a lake which discharges its waters into the *Wener*. We passed *Hogvalla*, *Leerhol*, and *Skamnäs*. In the forests were juniper-trees, growing to a very great size. We were ferried over to *Skamnäs*; the passage being nearly half-a-mile wide. The view of the lake from the post-house here was very fine. The country was more open and cultivated in going to *Hogboda* and *Prestbol*; interspersed with small lakes, the shores of which were ornamented with *fir*, *birch*, and *alder*. Two sorts of *alder* are very common in *Sweden*, as well as in *Norway*; growing often in very dry ground. It was dark before we arrived at *Prestbol*. We found here another miserable inn.

The next morning, *November the second*, we

descended into plains which reminded us of CHAP.
IX.
Norfolk and Suffolk. The appearance of the country was greatly improved. We changed horses at *Ilberg*; and reached *CARLSTAD*, the *Carlstad.*
capital of *Wermeland*, upon the *Wener Sea*, by eleven o'clock in the forenoon. The view in the approach to this city is very pleasing. We entered it by a bridge². The houses are covered with turf, as in all the towns leading from *Wenersborg* to *Stockholm*, on the southern side of the lake. The inn here was very dirty; yet *Carlstad* is a much finer town than *Wenersborg*: the streets are broad and long, and contain many good houses; and a general appearance of activity and business seems to denote a thriving

(1) See the Map in the preceding Volume.

"Equitum lustrationibus annalibusque festo D. Pauli et Lucie celebris, quæ etiamnum a Gothenburgensibus aliisque vicinis magno cum emolumento frequentantur."—*Descriptio Sueciæ*, tom. I. p. 442. *Lugd. Bat.* 1706.

(2) It is, in fact, built upon an island. (*See the Map*.) "The river *Clara*," says *Thomson*, in his account of this place, "runs through this province, and falls into the Lake *Vener*. It is a large river, but, like the *Dal*, runs so slowly, that it has more the appearance of a lake than a river. Some miles before it falls into the *Vener*, it divides into two branches, enclosing the Island of *Tingwalla*. At the northern extremity of this island stands the town of *Carlstad*; so called because it was built by *Charles IX*. This town is a Bishop's See. Like the other *Swedish* towns, it is built of wood. The streets are broad and straight, and the number of inhabitants about 1500. It carries on a commerce of wood and iron across the Lake *Vener*."—*Thomson's Trav. in Sweden*, ch. xx. p. 373. *Lond.* 1815.

CHAP.
IX.Exports
and Im-
ports.

Population.

place. The Episcopal Palace is built of wood, as are all the other houses. The Governor of the province also resides here. Both *Carlstad* and *Philipstad* were built by *Charles the Ninth*; the first being called after his own name, and the last after the name of his son *Philip*. The principal productions of the mines and forests of *Wermeland* are here shipped for *Gothenburg*; and the exportation of bar-iron and timber may be considered as the staple commerce of *Carlstad*. The importations consist of provisions and other necessities. Dirty inns are often the dearest: and this we found to be the case here. Every thing was charged at most exorbitant prices: but this is not a cheap place for any thing beyond common necessities. Loaf-sugar sold in the shops as high as a rix-dollar the pound, being all of it imported from *England*¹. The accounts given to us of the population of *Carlstad* were so discordant, that we could place no reliance upon them; some estimating it at 3000, and others at 1400: we were disposed to credit the last, rather than the first; and this number nearly coincides with the statement

(1) See page 250 of the preceding Volume, for an account of a manufactory for refining sugar at *Gefle*, belonging to Mr. *Hennis*; being the first of the kind established in *Sweden*.

already cited in a note. There is a square here, as at *Wenersborg*, surrounded by wooden houses, with a very neat appearance.

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IX.

We left *Carlstad*, on Sunday, *November the third*, passing the north-eastern branch of the *Clara*, by some called the *Carls Elf*², by a large stone bridge with iron rails, erected in a light and elegant style of architecture. It was a very foggy morning, which prevented our having some fine views of the Lake *Wener*. The Governor had sent for us, demanding a sight of our passport: we therefore called at his house, as we were leaving this wooden city. The road leading to *Brästegård* lies, for the most part, by the side of lakes, which discharge their waters into the *Wener*, by means of a small river. From *Brästegård* we came to *Molkem*; near which place there is a large lake, the village being prettily situate at the end of it. The church service had just ended; and a vast throng of the peasants filled the post-house, impatient to get their drams, according to custom, as a morning-whet after prayers. We saw no symptoms of intoxication: but this is the *Swedish*

River
Clara.

Brästegård
Molkem.

(2) "Urbs hic unica *Carolostadium*, à Rege Carolo IX. denominata, occupat insulam, ab ingenti flumine *Carls Elff*, ubi lacui *Wener* miscetur, factam, in quo ipso *Werniæ* medietullia sitam."—*Amanit. Regn. Suec. tom. I. p. 442. L. Bat. 1706.*

CHAP.
IX.

Change in
the dress
of the
Peasants.

custom. Many of them came from a great distance; and a little brandy, as one of them jocularly told us, helped to digest the sermon, and to sharpen their appetites for dinner. The road was crowded with little carts, each drawn by one horse, conveying the different families to their several homes; and with the youth of both sexes, who were pacing on foot, by the side of their parents. Here a change was again visible in the costume. In the north of ~~Wermeland~~, as we have described it, the dress of the peasants was uniformly black. It was also very uniform here: but the colours were grey or blue; all blue, or all grey, as the parties were from different districts. From *Molken* to *Brättefors*, the distance is fourteen *English*, or two *Swedish* miles; the roads being of that incomparable nature which we have so often described in *Sweden*; but to which frequent allusion may be made, that the Reader may bear in his mind the actual state of the country, and the industry of its inhabitants. Incessant rain had fallen for some time before, without effecting the smallest change in the excellent condition of these roads. The material for making them is always the same; a fine gravel, covering the broad and flat way. We did not consider the perfect state of the *Swedish* highways as owing so much to the

material used, as to the manner adopted in making them. There is nothing of promiscuous work carried on, by way of keeping them in order; nor any thing like a proposal set on foot for mending them by contract; enabling adventurers to enrich themselves, by jobbing, at the public expense. Each peasant has a portion of the road assigned, by measure, to his peculiar care: and these portions are marked out by little boards, bearing the names of the peasants to whose management they have been entrusted: by which means emulation is excited among them; every peasant being stimulated, by a degree of pride, to surpass, if possible, in his allotment, the work of his neighbour. We have known them, when they have attended us with their horses, point with exultation to the condition of that part of the road which has been under their care. At *Molkem* we dined in a neat new-built house, upon the game we had brought with us, and, as usual, upon our bread and cheese. Near *Brättefors*, our fore-axle broke: we therefore left the servants behind, to take care of the phaeton, and to have it mended; and went forward, in the peasant's cart, to the inn; where we hired two more carts to convey us to PHILIPSTAD. *Brättefors* is black with iron forges; and the houses, some of which are

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IX.

Manner of
keeping the
Roads in
repair.

Brättefors.

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IX.

good, are painted red. The road to *Philipstad* from *Brättefors*¹ passes many iron-foundries, and leads the traveller through finer scenery than the south of *Sweden* usually exhibits. The soil, if it may bear the name of soil, is altogether incorrigible: it consists of enormous loose fragments of bare granite, piled together till they become mountains, and form steep precipices. Upon these boulders there appears hardly a trace of any vegetable earth, or even of any kind of covering; yet they are thickly planted with forests of tall *pin*es, *birch*, and *juniper* trees, which, in a marvellous manner, have found nourishment for their roots in the interstices between the boulders. Wolves are very numerous here; bears not so frequent. But of all quadrupeds, the most abundant is the beautiful grey squirrel, which is seen skipping in the trees, and continually crossing the road. Sometimes, regardless of the traveller, these playful

Boulders.

Trees.

Animals.

(1) For the curious minerals produced in the whole of this mining district, but which did not occur in this route, the reader is particularly referred to *Engeström's Guide du Voyageur aux Carrières et Mines de Suède*; Stockholm, 1796. Also to *Thomson's Travels in Sweden*, c. 20. p. 374. Lond. 1815. According to *Engeström*, *Journée III.* p. 48. there was found in *Brättefors* Mine, about the middle of the eighteenth century, a small vein of *ferruginous clay*, crossing the vein of *iron*, very rich in *native silver*, partly massive globular and ramified, and partly mixed in fine grains in the clay; which, moreover, contained a good deal of *kupfer-nickel*, and a little ore of *cobalt*.

little animals, being perched upon a bough near the road, will tumble into all sorts of attitudes, as if purposely to invite his notice, and to entertain him with their gambols.

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It was nearly dark before we arrived at PHILIPSTAD. We could perceive some country-seats most delightfully situate upon the shores of the little lake, at the northern extremity of which the town is placed. Although not so large as *Carlstad*, it seemed neater in its appearance. The view of it across a part of the lake, in the approach to the town, affords a most pleasing prospect; and except in such circumstances of situation, there is little variety in the aspect of any of the *Swedish* towns. Having once figured to the imagination a number of low red houses, of a single story, each covered with turf and weeds, a picture is presented to the mind which will serve to give a correct idea of all the oppidan scenery of *Sweden*. There is no other country in the world, excepting perhaps *Russia*, that exhibits, over an equal extent of territory, such unvaried uniformity; and this, not only in the appearance of its buildings, but also of its inhabitants and landscapes. The dress of the women, from one extremity of the kingdom to the other, is nearly the same—a scull-cap, sitting close to the crown, edged with

Philipstad.

Uniform
appearance
of the
Swedish
towns.

Dress of
the Na-
tives.

CHAP.
IX.

Enclosures.

a little stiff lace; the hair being drawn as tight and straight as possible beneath the cap, from all parts of the head, as if to start from the roots: add to this, a handkerchief, thrown over the cap only when they go out; a jacket; short petticoats; stockings of coloured or white wool-len; and high-heeled shoes;—this is the general costume of the *Swedish* women. Then, for the landscape—one unbroken boundless forest; varied only in the uniformity of its aspect by little patches of cultivated land, enclosed by fences formed everywhere in the same manner, by sloping splinters of deal fastened by withys against upright poles'. In fact, there is no other kind of fence used for enclosures over all *Sweden*, *Lapland*, *Finland*, and *Norway*.

Philipstad is supported entirely by the mines in its neighbourhood: its commerce is consequently the same as that of *Carlstad*. It has been often destroyed by fire. The Church is a handsome white building, and looks well in the approach to the town. The environs are well wooded with *fir*, *birch*, and *alder*. There are here some good houses, but they are all painted of a red colour. The streets are paved. Most of the houses are covered with masses of iron

(1) See the Vignette to this Chapter.

slag, laid on to keep down the birch-bark upon the roofs.

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IX.

The next day, *Monday, Nov. 4*, our servants arrived at twelve o'clock with the carriage, which had been well repaired, and, as they said, rendered fit for any journey: but they had lost our bundle of fine *juniper*-sticks, which we had cut in the woods as we passed, and prized very much, as curious memorials of our journey, on account of their straight tapering shape, and the beauty of the bark which covered them. Although this loss, it might seem, would be easily repaired amidst the *Scandinavian* forests, we never afterwards saw the *juniper* flourishing in such perfection as upon the frontiers dividing the south of *Sweden* from *Norway*; where it rises, in a sandy soil, to the height of twelve, sixteen, and even eighteen feet. Its branches are more erect than those of the common *juniper*, the leaves narrower and in more acute points, and are placed farther asunder on the branches: the berries also are larger. This *Swedish* or *Tree-juniper* was considered by *Miller* as a distinct species from the *Juniperus communis*; but they are only varieties of the same species¹.

Juniper
Trees.

We left *Philipstad* about four o'clock P. M.;

(1) *Martyn's Edit. of Miller's Dict. Vol. I. Part 2. Lond. 1807.*

CHAP.
IX.*Onshyttå.*

and proceeded one stage, to *Onshyttå*. Near this place are the celebrated *Iron-mines* of *PERSBERG*, which it was our object to visit. For this purpose we waited on an officer of the mines, called the *Brüks Patron*, or Intendant; and also upon the Director of the works; begging also to see any collection of the *Persberg* minerals which might be in the place. We were not surprised at being told that no one interested himself in making collections; but that we might collect them ourselves, if we thought proper, at the mines. Having obtained also permission to descend into the principal mine, and to inspect the works, we fixed upon nine o'clock of the following day for making this visit; when the Intendant volunteered his services, and offered to accompany us. We then returned to the inn, where we found a very comfortable room; and spent the rest of the evening in writing our journals from the notes we had made, and in making preparation for our subterraneous expedition. Here we saw that remarkable bird, which, in *Norway*, is called, by those who speak the *English* language, the *Wild Turkey*: being, however, not much like a turkey; but properly ranking at the head of the whole genus *Tetrao*, which is seen in such perfection among all the forests of *Sweden* and *Norway*. It

is the largest of the two kinds of *Tetrao*, commonly known by the name of *Black-cock*, and is called *Tjader* by the *Swedes*. The male is called simply *Tjader*; but the female, *Tjader hēna*, or the *Tjader Hen*. This magnificent bird, of which we saw the cock in full feather, is the *Tetrao Urogallus* of *Brünnichius*¹. The *Norwegians* call it *Tiur*, *Teer*, and *Tedder*. We saw also with it the other kind of *Black-cock* found in *Norway*, which enabled us to compare the two together. This last is the common *Black-cock*. The male is called by the *Norwegians*, *Orre*, and *Orr-fugl*; and the female *Orre hēna*. It is the *Tetrao Tetrix* of ornithologists². Both one and the other are found in tolerable abundance in the woods. Of this beautiful genus *Tetrao*, so valuable as an article of food, and so much esteemed by epicures, no less than eight species are common upon the *Scandinavian* mountains.

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IX.

Two species of
Tetrao
or *Black-cock*.

On *Tuesday, Nov. 5*, we visited *Persberg*, distant a quarter of a *Swedish* mile from *Örshytta*. There are here not less than thirteen different mines, all worked for *iron*, which have no communication with each other. To inspect the whole of them would require at least three days

Persberg.

(1) *Ornithologia Borealis, Brünnichii*, p. 59. *Hafniae*, 1764.

(2) *Ibid.* The author has seen the *Tetrao Tetrix* served at a *London* dinner-table: it had been sent as a present from *Norway*.

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IX.

of active exertion. The hill, or mountain, in which these mines are situate, is itself entirely composed of veins and beds of iron-ore. A careful examination of one of them may, therefore, serve to afford a tolerably accurate knowledge of the whole. The Intendant who had so politely offered his services upon this occasion, as politely withdrew from the appointment; not being desirous to follow us into the depths of the mine, which he saw we were resolved to explore. However, he left us some stout miners to be of the party; men much better suited for the undertaking, and likely to be much more serviceable. For some time after our arrival, we were employed in collecting minerals from the vast heaps of excavated matter, and from the labourers in the works. The list of these will be found in a Note¹; being calculated only to interest the chemical or mineralogical reader. Afterwards, we set out to examine the oldest and the largest of these mines. They are all of

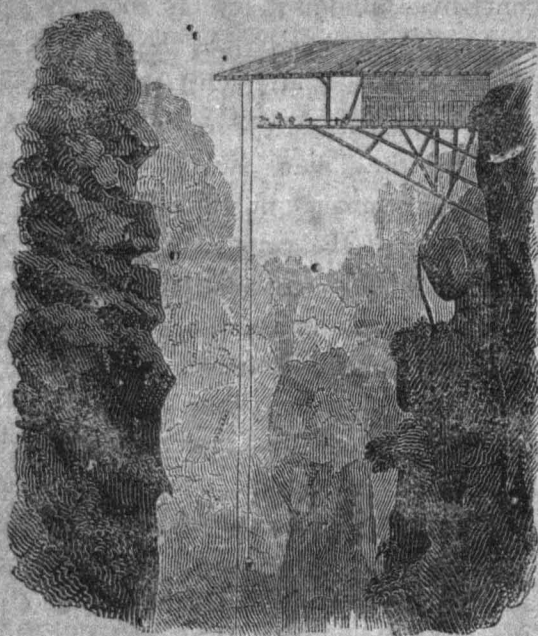
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- (1) Octahedral crystals of iron-oxide in chlorite.
 Foliated sulphuret of bismuth.
 Sulphuret of iron, crystallized in the octahedral and cubic form.
 Asbestos and amianthus, imbedded in green serpentine.
 Steatite and pot-stone.
 Crystallized carbonate of lime.
 Globular fibrous carbonate of lime.
 Dark green foliated mica.
 Leelite—sometimes called flesh-coloured horn-stone.
 Hörnblende.
 Crystallized quartz.
 Epidote.

them private property, divided into a great many shares. The miners work by measure; earning daily a sum equal to about two shillings *English*; that is to say, half a rix-dollar. They are paid weekly. CHAP.
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The author's visit to these mines was made after he had personally inspected many of the principal works of the same nature in other countries, and especially in his own. For the last ten years of his life, he had been much in the habit of seeing similar works: it is not therefore owing to any surprise at the novelty of the scene before him, that he has now to mention the astonishment he felt when he arrived at the mouth of one of the great *Persberg* mines: but he is fully prepared to say of it, and with truth, there is nothing like it in all that he has beheld elsewhere. For grandeur of effect, filling the mind of the spectator with a degree of wonder which amounts to awe, there is no place where human labour is exhibited under circumstances more tremendously striking. As we drew near to the wide and open abyss, a vast and sudden prospect of yawning caverns and of prodigious machinery prepared us for the descent. We approached the edge of the dreadful gulph whence the ore is raised; and ventured to look down; standing upon the verge of a sort of

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platform, constructed over it in such a manner as to command a view into the great opening as far as the eye could penetrate amidst its gloomy depths: for, to the sight, it is bottomless.



Immense buckets, suspended by rattling chains, were passing up and down: and we could perceive ladders scaling all the inward precipices; upon which the work-people, reduced by their distance to pigmies in size, were ascending and descending. Far below the utmost of these figures, a deep and gaping gulph, the mouth of

the lowermost pits, was, by its darkness, rendered impervious to the view: From the spot where we stood, down to the place where the buckets are filled, the distance might be about seventy-five fathoms; and as soon as any of these buckets emerged from the gloomy cavity we have mentioned, or until they entered into it in their descent, they were visible; but below this point they were hid in darkness. The clanking of the chains, the groaning of the pumps, the hallooing of the miners, the creaking of the blocks and wheels, the trampling of horses, the beating of the hammers, and the loud and frequent subterraneous thunder from the blasting of the rocks by gunpowder, in the midst of all this scene of excavation and uproar, produced an effect which no stranger can behold unmoved. We descended with two of the miners, and our interpreter, into this abyss. The ladders, instead of being placed like those in our *Cornish* mines, upon a series of platforms as so many landing-places, are lashed together in one unbroken line, extending many fathoms; and being warped to suit the inclination or curvature of the sides of the precipices, they are not always perpendicular, but hang over in such a manner, that even if a person held fast by his hands, and if his feet should happen to slip, they would fly

Descent
into the
Iron Mines.

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off from the rock, and leave him suspended over the gulph. Yet such ladders are the only means of access to the works below: and as the labourers are not accustomed to receive strangers, they never use the precautions, nor offer the assistance, usually afforded in more frequented mines. In the principal *tin*-mines of *Cornwall*, the staves of the ladders are alternate bars of wood and iron: here they were of wood only, and in some parts rotten and broken, making us often wish, during our descent, that we had never undertaken an exploit so harzardous. In addition to the danger to be apprehended from the damaged state of the ladders, the staves were covered with ice or mud; and thus rendered so cold and slippery, that we could have no dependence upon our benumbed fingers, if our feet failed us. Then, to complete our apprehensions, as we mentioned this to the miners, they said,—“Have a care! It was just so, talking about the staves, that one of our women fell, about four years ago, as she was descending to her work.” “Fell!” said our *Swedish* interpreter, rather simply; “and pray what became of her?” “*Became of her!*” continued

Catastrophe which befell a Female Miner.

(1) Females, as well as males, work in the *Swedish* mines.

the foremost of our guides, disengaging one of his hands from the ladder, and slapping it forcibly against his thigh, as if to illustrate the manner of the catastrophe,—“*she became (pankaka) a pancake!*”

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As we descended farther from the surface, large masses of ice appeared, covering the sides of the precipices. Ice is raised in the buckets with the ore and rubble of the mine: it has also accumulated in such quantity in some of the lower chambers, that there are places where it is fifteen fathoms thick, and no change of temperature above prevents its increase. This seems to militate against a notion now becoming prevalent, that the temperature of the air in mines increases directly as the depth from the surface, owing to the increasing temperature of the earth under the same circumstances and in the same ratio; but it is explained by the width of this aperture at the mouth of the mine, which admits a free passage of atmospheric air. In our *Cornish* mines, ice would not be preserved in a solid state at any considerable depth from the surface.

After much fatigue, and no small share of apprehension, we at length reached the bottom of the mine. Here we had no sooner arrived, than our conductors, taking each of us by an arm,

Bottom of
the Pers-
berg Mine.

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Striking
scene in
the Great
Cavern.

hurried us along, through regions of "thick-ribbed ice" and darkness, into a vaulted level, through which we were to pass into the principal chamber of the mine. The noise of countless hammers, all in vehement action, increased as we crept along this level; until at length, subduing every other sound, we could no longer hear each other speak, notwithstanding our utmost efforts. At this moment we were ushered into a prodigious cavern, whence the sounds proceeded; and here, amidst falling waters, tumbling rocks, steam, ice, and gunpowder, about fifty miners were in the very height of their employment. The magnitude of the cavern, over all parts of which their labours were going on, was alone sufficient to prove that the iron-ore is not deposited in veins, but in beds. Above, below, on every side, and in every nook of this fearful dungeon, glimmering tapers disclosed the grim and anxious countenances of the miners. They were now driving bolts of iron into the rocks, to bore cavities for the gunpowder, for blasting. Scarcely had we recovered from the stupefaction occasioned by our first introduction into this *Pandæmonium*, when we beheld, close to us, hags more horrible than perhaps it is possible for any other female figures to exhibit, holding their dim quivering tapers to our faces, and

bellowing in our ears. One of the same sisterhood, snatching a lighted splinter of deal, darted to the spot where we stood, with eyes inflamed and distilling rheum, her hair clotted with mud, dug naked and pendulous; and such a face, and such hideous yells, as it is impossible to describe:—

Black it stood, as Night—fierce as ten Furies—
Terrible as Hell——

If we could have heard what she said, we should not have comprehended a syllable: but as several other *Parcæ*, equally *Gorgonian* in their aspect, passed swiftly by us, hastening tumultuously towards the entrance, we began to perceive, that if we remained longer in our present situation, *Atropos* might indeed cut short the threads of our existence; for the noise of the hammers had now ceased, and a tremendous blast was near the point of its explosion. We had scarcely retraced with all speed our steps along the level, and were beginning to ascend the ladders, when the full volume of the thunder reached us, as if roaring with greater vehemence because pent amongst the crashing rocks, whence, being reverberated over all the mine, it seemed to shake the earth itself with its terrible vibrations.

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IX.Imbedded
state of the
Ore.

We were afterwards conducted into other cavities of the *Persberg* works. The whole hill of *Persberg* may be considered as a vast deposit of iron-ore; the ore lying in separate beds. The miners work in spacious caverns, like those of our salt-mines, at *Sandbach*, in *Cheshire*; excepting that the interior of our salt-mines, containing neither glaciers nor cataracts, nor dreadful precipices to be scaled by means of rotten ladders¹, nor filthy wretched females doomed to do the work of men, are rather pleasing than intimidating in their appearance. The ore of the *Persberg* mines consists of *magnetic iron-oxide*, either in fine or in coarse grains. Those mines which we saw, and in which, working with our own hands, we obtained specimens of the ore, exhibited this *oxide* in a state of very remarkable association with *garnet*; insofmuch, that *garnet* may be considered here, not only as a leader to the ore, but as the ore itself; many of the specimens wrought for the *iron* they contain being masses of *garnet*. The whole district is of primitive formation; the rocks being of *gneiss* or of *granite*, containing more or less of *hornblende*,

(1) The descent into the *Cheshire* salt-mines is by means of buckets, in which ladies may be conveyed into the mine, and back again, with the utmost safety and cleanliness.

and, in some places, beds of primitive lime-stone².

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As soon as we had concluded our examination of the *Persberg* mines, we went to the Inspector's house, where we packed up our minerals. Afterwards, returning to the inn at *Onshyttä*, we set off for *Saxån*. The whole of this part of *Wermeland* is throughout perforated by mines.

About nine *English* miles from *Onshyttä*, at a place called *Långbanshytta*, there is an exceeding rich mine of iron ore, of which the principal part is the *per-oxide* called *hæmatite*: it lies to the north of the road leading towards *Saxån*; but we could not bestow time enough for visiting this mine. The mineralogical traveller will however be wise, if he do not follow our example in this respect. He will find few mines

(2) "*Montana est*" (observes the author of the *Amantitez Regnorum Sueciæ*, with reference to this province,) "*et sylvestris. Metallum fodinas, et nuper admodum ditissimam cupri venam inventam habet.*" (*Deliciæ, sive Amæn. Regn. Suec. tom. I. p. 442. L. Bat. 1706.*)

"The whole of *Vermeland*," says Thomson, "with the exception of a small track on the borders of the *Vener*, is primitive, and may be said to consist entirely of *gneiss* rocks, similar to those which constitute the neighbourhood of *Gottsburg*. Here and there occur beds of mica-slate, limestone, primitive *grünstone*, &c.; but none of them, as far as I could learn, are of any great extent. It is to the mines which abound in this province that it owes its chief value." *Thomson's Trav. in Sweden*, p. 374. Lond. 1813.

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richer in interesting minerals¹. He should also be aware, that at the distance of ten *English* miles and a half from *Philipstad*, there are the iron-mines of *Normark*, in which the minerals are neither so curious, nor so varied and abundant as at *Långbanshytta*; but the mines themselves

(1) It has been wrought upwards of three hundred years. It is near a lake called *Långban*. According to Dr. Thomson, (*Trav. in Sweden*, p. 378,) it lies in a limestone rock. The minerals found in this mine are :

1. Sub-varieties of hæmatite.
2. Magnetic iron-oxide, granular, fibrous, and crystallized. Also micaceous iron and specular iron ore, similar to that from *Elba*, yet attracted by the magnet.
3. Sulphuret of iron.
4. White manganese spar, globular and radiated.
5. Iron spar.
6. Ferruginous scintillating sulphate of lime.
7. Sparry carbonate of lime.
8. Red and brown jasper, according to *Engeström*. According to *Thompson*, this is iron flint.
9. Garnets, red and yellow; containing from 15 to 21 per cent. of iron. (*Thomson*).—Dr. Thomson mentions a garnet found here, containing, besides 26 per cent. of oxide of iron, above 8 per cent. of oxide of manganese, lime, carbonic acid, and soda: the silica amounting to 35.20.
10. Pycnite.
11. Tourmaline.
12. Green and yellow serpentine.
13. Mountain-leather, mountain-cork, and other varieties of asbestos and amianthus.
14. White-clay.
15. Black massive hornblende.
16. Epidote.
17. Sahlite.
18. Petroleum, and glance-coal.
19. Red silicate of manganese.

are very antient, and well worthy of his attention^s. A little more than an *English* mile from *Normark* are also the iron-mines of *Taberg*; and they are rendered remarkable for the singular varieties of *asbestos*, particularly the beautiful *amianthus* found there^s. In returning to *Philipstad*,

(2) It lies in mica-slate. Limestone, containing manganese and hornblende, occurs in this mine. (*Thomson*.)—Its other minerals are:

1. Magnetic iron-oxide.
2. Sulphuret of lead, crystallized.
3. Varieties of crystallized carbonate of lime.
4. Varieties of asbestos. *Mountain-leather, mountain-cork.*
5. Dark foliated mica.
6. Dark-green fibrous hornblende.
7. Crystallized sahlite.
8. Red garnet.

Dr. Thomson (*Trav. in Sweden, p. 375*) mentions a peculiar mineral found in this mine, which has not yet been named. It was examined, he says, by *Gahn*, who found it to contain muriatic acid. It occurs crystallized in regular six-sided prisms; its colour is yellowish brown, passing into greenish: by transmitted light, it appears greenish yellow. Its specific gravity equals 3.081.

(3) This iron mine lies also in mica-slate. The ore is magnetic iron-oxide. Its principal minerals, according to *Engeström* and *Thomson*, are:

1. Black granular magnetic iron.
2. Sulphuret of zinc.
3. Cubic sulphuret of iron.
4. Lime-spar.
5. Micaceous steatite, and serpentine.
6. Dark-green foliated mica.
7. Varieties of amianthus and asbestos.
8. Native bismuth.
9. Sulphuret of copper.
10. Magnesian carbonate of lime. (*Bitter-spar*.) Also, light-blue *bitter-spar* mixed with asbestos.

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1.

Machinery
for the
Mines-
Pumps.

after visiting these mines, he will also find the iron-mine of *Agegrufvan*, which lies close to the road'. Leaving *Onshytta*, we were struck by the appearance of a most curious mechanical contrivance, which presented itself in our road, for working the mine-pumps. It consisted of a most extensive combination of levers, all in motion, working parallel to each other by means

11. Dark-green chlorite.
12. Light-green asbestiform actinote.
13. Light-green glassy tremolite.
14. Silicate of magnesia, called *greenish-grey steatite*, consisting of

Magnesia	31
Silica	48
Iron	5
Volatile matter	16

100 Geijer.

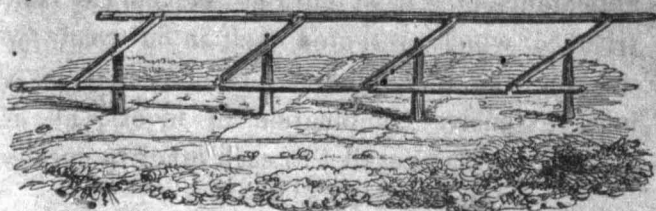
(1) The mines of *Age*, called *Agegrufvan*, are situate about seven miles from *Philipstad*. (*Thomson's Trav. in Sweden*, p. 377.) Like the preceding, they consist of *iron-ore*, which occurs in a rock of mica-slate. The minerals found here, are :

1. Massive and granular magnetic iron-oxide.
2. Many varieties of lime-spar.
3. Garnet, in regular dodecahedral crystals.
4. Dark foliated mica.
5. Black foliated hornblende.
6. Epidote, crystallized in quartz.
7. Massive epidote.
8. Various forms of asbestos.
9. Hydrates of silica, of various colours.
10. Crystallized quartz.

For an account of other mines and minerals in the Province of *Wermeland*, the Reader is referred to *Engeström's Guide aux Mines de Suède*; *Stockholm*, 1796: but for much better, and more scientific information, to *Thomson's Travels in Sweden*. *Lond.* 1813.

of water, being separated by transverse bars resting upon upright posts with pivots. These

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bars were about eight or ten feet in length; but the side-levers extended to mines out of our sight. The stream and wheel for giving motion to these levers was on the left-hand side of the road; under which, in one place, the levers passed, and, appearing again on our right, extended over the surface of the ground as far as we could see.. Their appearance all in motion, without any person being visible near them, was very extraordinary; for it is difficult to conceive how so much machinery, consisting of such numerous parts, can be preserved in free action and without injury, remote from all observation. We afterwards passed several of these water-works, affording astonishing proofs of the extensive mining operations here carried on. They all move alike, by a successive series of impulses.

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IX.*Saxån.*

Our journey from *Onshytta* to *Saxån* was over a wild and mountainous district; but the roads were excellent. Quantities of slag and scoriæ, in our approach to *Saxån*, denoted the presence of iron-foundries, to which it owes its support: Part of the iron-ore from *Persberg* is brought here, to be smelted and forged: it is then conveyed, in the form of bar-iron, to *Christinehamn*, and thence, by the *Lake Wener*, to *Trolhætta* and *Gothenburg*. This trade supports the village of *Saxån*, which consists of a rich and good inn, and a few respectable farm-houses.

Westmania.

On *Wednesday, Nov. 6*, we left *Saxån* about seven A.M. The morning was very wet and cold. We had proceeded about half a *Swedish* mile in our day's journey to *Laxbro*, when we passed the boundary of the province of *Wermland*, and entered into *Westmanland*, or, as it is sometimes called, *Westmania*; the natives of which province speak the *Swedish* language in greater purity, and with a better accent, than any other. Our road lay through forests. In going to *Nytorp*, our first relay, the appearance of beautiful lakes, like those in the north of *Sweden*, engaged our admiration. We often wished to halt, and make drawings of them. The timber in these forests runs to a prodigious height, but the trees are slender, and by no

means equal in bulk to those we had seen in other provinces. We passed iron-foundries and sawing-mills. From *Saxân*, the whole way to the frontier of *Dalarne*, or *Dalecarlia*, in journeying through *Westmanland*, the traveller constantly meets with mines or iron-foundries: and it is worthy of remark, that, whenever these appearances take place, there are also evident marks of the blessings of industry, in the neatness and comfort of the dwellings near them, and sometimes in the signs of wealth and of elegance which may be observed. These subterraneous treasures, and their consequences, in employing so many foundries, and in requiring so much aid of machinery for working the mines, are among the most profitable possessions of *Sweden*. Their evident importance in the prosperity to which they give rise, throughout districts that would otherwise be deserted, ought to serve as a lesson, to the inhabitants of other countries, to seek diligently for such sources of industry and opulence, where the features of the country are unfavourable to agriculture; since it is the same Providence which renders productive to human labour the most bleak and barren rock, and the most fertile vegetable soil. We had left *Wermeland* with feelings very different from those with which

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we entered it from *Norway*; where the barren aspect of the country seemed calculated to excite the murmur of its inhabitants. For even amidst these rocks we beheld “a land which the Lord had blessed;”—a land, it is true, where sluggards might starve,—as they may anywhere; but where a sturdy and active race of men have already found all that is necessary for the comforts and even for the luxuries of life;—“A LAND WHEREIN THOU SHALT EAT BREAD WITHOUT SCARCENESS, NOR LACK ANY THING IN IT; A LAND WHOSE STONES ARE IRON, AND OUT OF WHOSE HILLS THOU MAYEST DIG BRASS.”

Hällefors. About nine *English* miles from *Saxån* is *Hällefors*, a place long rendered remarkable for its *silver-mines*, but which are now nearly exhausted¹. Three *English* miles and a half beyond *Hällefors* we arrived at *Nytorp*. Rain fell incessantly,

(1) The minerals found at *Hällefors* are;

1. Argentiferous sulphuret of lead.
2. Sulphuret of lead, crystallized in cubes.
3. Micaceous sulphuret of lead.
4. Yellow sulphuret of copper, in acicular crystals.
5. Sulphuret of iron, in various forms.
6. Sulphuret of zinc.
7. Lime-spar.
8. Crystallized quartz.
9. Hydrates of silica, of various hues.
10. Siliceous breccia.

and in torrents; but the roads, as before, were so excellent, that it seemed to make no alteration in them. Leaving *Nytorp*, and going towards *Hjulsjö*, we observed beautiful lakes on each side of the route. We had forest-scenery in our way from *Hjulsjö* to the mines of *Nya Kopparberg*; a name signifying the *New Copper Hill*, or *Copper Mountain*; in opposition to *Gamla Kopparberg*, or the *Old Copper Mountain*, the name usually given to the works at *Fahlun*. The copper-mines of *Nya Kopparberg* were exceedingly rich when they were first discovered, but at present they are poor. The whole district is of primitive formation, and consists of *schistose* or *foliated granite*. Various specimens of *granite* may be had from these mines; and several varieties of *fluor-spar*, which is not a common mineral in *Sweden*. We found here that interesting variety of *fluor-spar*, which, from its phosphorescing with a green light, is called *Chlorophane*: and it may be remarked, that *fluor* never exhibits phosphorescence in such a high degree of perfection, or with such beautiful hues, as when it is found in a state of association with the ores of copper². The ore of *Nya Kopparberg*

Nya Kopparberg.

Minerals.

(2) The minerals of *Nya Kopparberg* are:

1. Grey sulphuret of copper.
2. Yellow sulphuret of copper—*peacock-ore of copper*.

3. Sulphuret

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is the *yellow sulphuret*, called *copper pyrites*: it is found accompanied by the *sulphurets of zinc and iron*. Among the rarer minerals of this mine may be mentioned the remarkable substance to which *D'Andrada* gave the name of *Petalite*; since rendered so interesting to the mineralogist and the chemist, by containing *Lithina*, the new alkali, discovered in this mineral by *Arfvedson*, the pupil of *Berzelius*'.

Laxbro.

The village, near which the *Nya-Kopparberg* mines are situate, is called *Laxbro*. The inn here was quite full, owing to a Sessions held by

3. Sulphuret of zinc.
4. Sulphuret of lead.
5. White, green, and violet fluor-spar.
6. Fibrous hornblende.
7. Actynolite.
8. Pot-stone.
9. Dark-red feldspar.
10. Mica.
11. Sulphuret of iron.
12. Quartz.
13. *Petalite*. (See *Thomson's Travels in Sweden*, for this locality of *petalite*.) The mines from which the specimens have been derived, that have been usually sold in *England*, are those of *Utö*.

(1) This discovery took place nearly at the same time that the analysis of *petalite*, by the author of these Travels, was published in *Dr. Thomson's Annals of Philosophy*. The author had transmitted to the celebrated *Berzelius*, through *Mr. Swedenstierna of Stockholm*, his doubts as to the presence of a new body in *petalite*, calculated to supply the loss sustained in his own examination of that mineral. In *Mr. Swedenstierna's* answer, the discovery of *lithina*, by *Arfvedson*, was announced. *Mr. Swedenstierna's* Letter is dated *February 17th, 1818*. It is now in the author's possession.

the principal Magistrate of the district: but the master of the inn, with great kindness, had provided for us most excellent accommodations in a very splendid house, hard by, belonging to one of the proprietors of the mines. . We found here a few books, which convinced us that topographical works were beginning to make their appearance in *Sweden*. Among others, we saw a description of the town of *Orebro*, with plates tolerably well executed: it had been printed in *Stockholm*. The business of the Sessions had assembled some of the lawyers. We passed the evening with one of them, a very intelligent man, well read in the antiquities of his country, and well acquainted with the *Finnish* language. He told us that this language is more difficult for a *Swede* to become acquainted with than with *English*; which must be evident to an *Englishman*, from the resemblance his own language bears to the *Swedish*; and its total discrepancy, when compared with the language of *Finland*, which seems to bear no resemblance to any other language, if we except that of *Lapland*, to which, however, it is not nearly allied. A curious circumstance happened in former times, during a war between *Sweden* and *Russia*. A colony of *Finns*, disturbed in their settlements, by the predatory incursions of the *Russians*,

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deserted their country, crossed the *Gulph of Bothniâ* at the *Quircken*, and established themselves in the forests of *Herjeådalen*, where their descendants, at this hour, speak the *Finnish* language in its original purity.

Beauty of
the Lakes.

If we were to describe all the beautiful lakes which we saw in our next day's journey, *Nov. 7*, in going from *Laxbro* to *Bommarsbo*, the Reader might fancy himself transported, by the Fairy-led Muse of *Spenser*, amidst the scenes of some terrestrial paradise: so much is due to the picturesque beauty of the landscapes. A traveller, who is a draughtsman, might be tempted to halt almost at every instant, and endeavour to delineate some of these delightful views.

Soon after leaving the house of the wealthy proprietor, who had so politely and hospitably received and entertained us, we passed close to the mouth of one of the principal mines, which, with its yawning gulph and complicate machinery, occurred by the side of the road. There was not a living creature to be seen near it; but we were told that a numerous body of miners were at their work below. No precaution is used in *Sweden*, either to close up, or to fence, the dangerous pits which have been made in working the mines; neither is there any sign by which their situation may be known. The con-

sequences must be obvious, in the accidents which happen: for the benighted stranger who is travelling in this country, and the herds of cattle foddered in the forests, must be constantly liable to fall into them. We passed some of the lakes before mentioned. Near *Hagforss* we saw a smelting-house, once used for *silver-ore* found near this place, in *Christian's Mine*, which is now exhausted. A continued series of lakes was exhibited to us, in the midst of the most beautiful undulating forest-scenery, during the journey from *Hogforss*, through *Hellsion*, to *Qstanbo*, which is situate upon one of those lakes. How numerous are these aqueous scenes in *Sweden*! May they not be considered as the reliques of that vast world of retiring waters, out of which rose the rocks and the forests of *Scandinavia*; and of which the *Wener* and the *Watter* Lakes, nay, even the *Gulph of Bothniä*, and all the *Baltic Sea*, are themselves only the vestiges? "These lakes," says *Thomson*¹, in his valuable account of *Sweden*, "consist of the purest and most transparent water; and serve not only to beautify the country, but are a considerable resource to the inhabitants, on account of the numerous fish which

(1) *Trav. in Sweden*, p. 392. Lond. 1813.

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IX.Diminu-
tion of their
waters.

they all contain." In very many instances, their banks are so covered with wood, that the trees grow luxuriantly quite down to the water's edge; which remark particularly applies to the *Wener*, covered all round its shores with the most magnificent groves. Yet, that these lakes are but the remains of an overwhelming deluge, once as hostile to the prosperity of the human race as they now are beneficial, is evident from this circumstance, that their waters are gradually retreating. Judging therefore of the distant and the future by the present, we may fairly conclude, that, as a general flood once involved the whole of this watery region, out of which—realizing the antient fable of a *Venus Anadyomene*—has risen the whole of *Scandinavia*, so it is reasonable to infer, that some portion of mankind, yet unborn, will hereafter people the mountains and the hills and the valleys now covered by the waves. "There is great reason to believe," observes the author before cited¹, that the lakes in *Sweden* are diminishing in their size, and that many of them will at last dry up. I saw several striking instances of this diminution. It is attended with a corresponding diminution in the

(1) Trav. in Sweden, p. 394. Lond. 1815.

size of the *Swedish* rivers; most, if not all, of which originate from lakes. [This diminution has become so striking at *Upsala*, that apprehensions are entertained that the river running through the city will soon be incapable of driving a corn-mill, upon which the University depends for a considerable part of its revenue. A diminution in the size of the *Baltic* has ever been remarked by the *Swedish* writers; and demonstrated by evidence that, to me, at least, appears incontestable.]

From *Ostanbo* to *Smedbacka*, the distance is only half a *Swedish* mile. Here we found an iron-foundry, and several new buildings pleasantly situate upon a lake. We considered a dirty inn at *Smedbacka* as by no means a common occurrence in *Sweden*. In this country, cakes are made by mixing the blood of animals with rye-flour, which are afterwards fried in grease, and esteemed luxurious articles of food. Should any fastidious reader consider such a diet as the remains of barbarous *Teutonic* customs, let him be reminded, that, where refinement is supposed to be exhibited in its most boasted state of advancement, it is no unusual thing to see a mixture of blood and fat stuffed into a swine's entrails, and served up at the tables of the great, under the name of *black-puddings*; at which, per-

*Smedbacka.**Blood
Cakes.*

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haps, his own mouth has often watered.—Peace, therefore, to the poor *Swede*, who seasons his rye-cake with blood!

Entrance
of *Dale-*
carlia.

Varieties
and Lux-
uriance of
the *Fungi*
and *Musci*.

Between *Smedbacka* and *Bommarsbo*, we entered the province of *Dalarne*, or *Dalecarlia*. Here a botanist might amuse himself, amidst the supreme Court of the *Cryptogamia*, by selecting, in their best dresses, the most luxuriant specimens of *Fungi* and *Musci* which perhaps he will find in all Europe. Every species of *morel*', in the most grotesque forms, like a very buffoon of plants, and of uncommon size, grows here: also various kinds of *Lycopodium*, especially the *complanatum* and the *annotinum*:—the former, called *jämna* by the *Swedes*, and pronounced *yemna*, is the common tenant of all the sterile forests in *Sweden*: it is often used, by the natives, for giving a yellow dye to their wool. Of the *morels*, we observed, that, in proportion as their growth was the more luxuriant, so much the more remarkable was the plant for its strange and misshapen appearance: it was hardly possible to view some of them without laughing; so uncouth and ridiculous was their appearance: we might almost fancy that there existed a spirit of fun

(2) *Phallus esculentus*, *Phallus impudicus*, and *Phallus caninus*.

and caricature in the lowest order of vegetable beings. At *Bommarsbo* we found only a single house. The owners were poor; but the accommodations were clean and good, and much superior to those of *Smedbacka*. In *Sweden*, as in *Norway*, every housekeeper manufactures his own candles; and some of these home-made candles were brought to us, as clear and white as if they had been composed of pure spermaceti. But what is more curious, they are often not made until after the traveller arrives. At *Bommarsbo*, they were made and sent in almost as quickly as they could have been procured at the great inns at *Salt Hill* or *Marlborough*, by an order given to a waiter.

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IX.

Bommarsbo.

Home ma-
nufacture
of

Upon the 8th of *November* we left *Bommarsbo*, at eight A. M. with a view of a lake towards our right, which continued for some distance: and when we left it, a more distant view of lakes and islands extended towards the south-east. We changed horses at *Russ-gården*, and proceeded to *Naglarby*; passing, in our way, an extinct ironmine, and also a place where there had been a foundry. As we drew near to *Naglarby*, the country was more open, well cultivated, and fully peopled. The general aspect of *Dalecarlia* is that of a level fertile plain, enclosed for agriculture, and surrounded by mountains. The

*Russ-går-
den.*

Naglarby.

General
Features
of *Dale-
carlia.*

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village of *Naglarby* is situate in this plain, and surrounded by *lakes* and *rivers*. After we left it, we continued along this delightful plain for about two *English* miles, when we came to a ferry over the river *Dal*; and, in our way to this ferry, saw several tributary streams, in which a sort of stake-fences were set in all directions, as enclosures to catch the numerous fishes wherewith these waters abound. Our road from *Naglarby* to *Fahlun* was long and dreary, chiefly by the side of the *Dal*. Upon the left of our route we were shewn the residence of the woman who was nurse to the young king, *Gustavus the Fourth*. The Court of *Sweden* chose for this purpose a *Dalarne* peasant; the females of this country being esteemed not only as the best nurses in *Sweden*, but as valuable servants in any menial capacity in which they engage. Everything that a *Dalarne* man does, is thought better done than if executed by other hands: and, in their own opinion, the natives of this province believe that no people can compare with them. The number of births in *Dalecarlia* is surprisingly great: but, as its produce is not equal to the support of one half of its population, the youth of both sexes are sent out to earn a livelihood in different parts of *Sweden*: afterwards they return home; as they do not choose to marry out of their own

Character
of the
Natives.

province. A *Dalarne* man always considers himself equal, in strength, prowess, and ability, to any two of the natives of the rest of *Sweden*. The antient language of the people, and their antient mode of dress, is still kept up among them. We were told that in the northern district of this province a dialect is spoken closely resembling *English*; but the same may be said of other parts of *Sweden*: and more than once we had an opportunity of remarking, that when the *Swedes* offered examples of *Swedish* dialect which to them were almost unintelligible, either owing to their antiquity or to their provincial character, they were, on this account, the more intelligible to us; and so like to our old *English* language, that they differed from it only as the sort of *English* used by *Robert of Gloucester*, exhibiting the transition from the *Saxon* to the *English* language¹, or that which *Bellenden* adopted in his translation of *Boëthius*², differs

Dialect.

(1) See Dr. Johnson's History of the *English* Language, in the Preface to his Dictionary.

(2) *Hector Boëce*, or *Boëthius*, Canon of Aberdeen, wrote a History of Scotland in 1546: its translation, or paraphrase, was written by *Bellenden*, Archdean of *Murray*; and appeared in *Edinburgh*, in black letter, in 1541.

"They use," says Dr. Thomson, "a dialect of their own, similar to that dialect of *English* which is spoken in the Lowlands of Scotland. It is reported, that a *Dalecartian* who spoke this language, being landed near *Aberdeen*, was understood by the inhabitants." *Trav. in Sweden*, p. 202.

CHAP.
IX.Antient
Dance.

from the *English* now in use'. The aspect of the country is not like that of *Sweden* in general, being more level and open: we thought it resembled *Cambridgeshire*. The old dance of the *Dalecarlians* is simple, and very pleasing: it is performed by three persons—a man with two

(1) *Holenius*, of *Fahlun*, in the *Dissertationes Academicæ* of *Upsal*, published a brief Vocabulary of the *Dalarne dialect*, shewing its relationship to the *Gothic*, *Icelandic*, *Danish*, *Saxon*, *Teutonic*, *Vandalic*, *German*, *English*, *Greek*, *Spanish*, *Italian*, *Anglo-Saxon*, *Franco-Theotisc*, and *Mæso-Gothic*. See the Section entitled "*De Lingua Dalecarlorum hodierna*," in the Second Part of his Thesis "*De Dalecarlia*," printed at *Upsal*; p. 139.—Many other instances might be adduced, more striking to an *English* ear than those which he has mentioned; but among them are the following:—

DALARNE.	ICELANDIC.	ENGLISH.
Bradda . . . jentaculum apponere	Braud . . .	Bread.
Dret . . . Excrementum . . .	Drit . . .	Dirt.
Friosa . . . Frigere		to Fry.
Gron . . . Sege	Grion . . .	Grain.
Grass . . . Gramen		Grass.
Hetta . . . Capitis tegmen . . .	Hattur . . .	Hat.
Is . . . Ego	Eg . . .	I.
Is . . . Glacies		Ice.
Jata . . . Edere		to Eat.
Knaf . . . Culter	Knjffur . . .	Knife.
Lyr . . . Hepar	Lyr . . .	Liver.
Blög . . . Multum	Blög . . .	Buch.
Blök . . . Lac	Blöök . . .	Milk.
Salti . . . Sal	Salt . . .	Salt.
Öra . . . Auris	Öra . . .	Ear.

women, one on each side of him, who alternately engage his attention, until the dance concludes by an *allemande*, in which, as by one accord, they all join. We have found occasion, in former parts of our journey in *Scandinavia*, to allude to the curious remains of customs which belonged equally to the *Hyperboreans* and the *Greeks*. Whoever attends to the rites and ceremonies of a *Dalecarlian* wedding, will be struck with their resemblance to the manners of the *Antient Greeks*. Of this the *Swedish* writers have, in some instances, been themselves aware²; although sometimes it may have led them erroneously to suppose that one nation owed its origin to the other, rather than that both were the descendants of one common stock. That we may avoid repetition, we shall not again otherwise notice the curious *Runic Staves*, of which we met with more than one instance in the villages of *Dalecarlia*.

Original
use of the
Runic
Staves.

(2) "Quod si comparatio accuratior instituenda foret Græcorum Romanorumque rituum circa nuptias, in multis Dalecarlorum ac veterum Hyperboreorum responderent." *Ibid.* p. 137. *Conf. Heims Kringla Peringsk. tom. I. pp. 140, 557, 655. tom. II. p. 425. Verelii Not. in Hist. Herv. c. 4. L.L. Dal. Tit. de Matrim. sect. 1 & 2. Sagan af Hæna Thorir. c. 17, 18, 19. Alb. c. 6. Thorde Hredo, c. 17, 37. Liosvet. S. p. 17. Gunlaug. Ormst. S. p. 18. Wilhelm Siodz, c. 68, &c. Ol. Tryggw. c. 29, 42. Herraudz oc Bosc. S. c. 11, &c. Swarfdala, c. 17. Eigla, c. 11, et 56. Rod. hin Spaka, c. 1. Isfird, c. 34. Codd. MS. in Arch. Antiquit. Holmensi; Jac. Gronovii Thes. Antiq. Gr. tom. VII, et VIII. J. G. Grævii Thes. Antiq. Rom. tom. VIII, et XII.*

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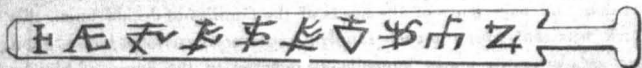
That they are the same as the *written-rods* mentioned in the earliest part of Sacred Scripture, has been already shewn, in a former part of this work¹. But the original use of them we found here sufficiently explained: for, like the staff of an *Ataman* among the *Cossacks*, they are still regarded as ensigns of office, and are borne in the hand upon particular occasions, by the Elders of each village where they are found. The earliest *Grecian* annals seem also to allude to similar insignia, as the staves of the accredited agents of power².

(1) See p. 125 of this Volume.

(2) A passage in Dr. Fiott Lee's MS. Journal remarkably illustrates the use of these *Runic Staves*; which may have been alluded to by *Homer*, and are evidently the same as the *sticks* of the *Tribes of Israel* mentioned in Scripture:—

“When *Jupiter* had occasion to despatch his courier, we are told by *Homer* that *Mercury* εἴλετο τὸ ἕλφος τῷ δ' ἀνδρῶν ὄμμασιν ἐίλγει, τῷ κ. τ. λ. (αὐτάρ κ. τ. λ.): and probably without this ensign of office which he took with him, he had no powers at all. His efficacy thence originated. He had no influence in his proper person. And, lo! this wand was but a piece of ivory!

“When I was on the borders of *Lapmark*, in a peasant's house called *Niemesele*, on a lake side, I observed, hanging up, a square-sided stick about a foot long, with fine gilt-work and carving about it; and on one side were cut the following ten characters:



I was much amused with it, and asked them to part with it; intending to make them a small present which, in my opinion, would be an equivalent; when it turned out that I might as well have asked the Lord-Mayor for the city-mace: and judge of my surprise, upon hearing that it was the

One mile and a quarter before we reached *Fahlun*, we turned a little out of the road, to visit the house in which *Gustavus Vasa* remained concealed, and whence he afterwards effected his escape, by means of a privy. It is at a place called *Sjora Orns*. This house is now the property of a Colonel in the *Swedish* service, who has been at great pains and expense to preserve, as much as possible in its pristine state, this asylum of the great father of the *Swedish* Kings. They shewed to us the chamber and bed in which he slept; his clothes, weapons, coat of mail, and many other things, even to his watch and his Bible. His watch and coat of mail appeared to us to be the most curious reliques. The watch was of an oval shape, but the figures upon it were like those now in use. The coat of mail was like the armour used by the *Circassians*; and

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IX.

Retreat of
Gustavus
Vasa.

ensign of office in the village; that he who had it in possession, *pro tempore*, was the Chief, the Civil Governor of the Village, which consisted of ten families, each of which had its own distinguishing mark;—that upon any very public and important emergency, which demanded the collected wisdom and experience of the heads of the families to decide upon, this stick was sent round to each family; and every head of a house, upon seeing his family-mark, immediately repaired to the house of him in whose custody the stick had been consigned, and there they all held their deliberations. In case they do not attend the summons, they are severally fined. No money therefore could have purchased it: and that which I at first regarded as an object of amusement, I found to be held an object of veneration.” — *Dr. Lee’s MS. Journal*.

was perhaps manufactured in *Mount Caucasus*, where the natives still sell such articles of their manufacture to the *Russians*. It is a shirt of twisted mail, fitting close to the body, through which no common weapon could penetrate. We found the weight of it by no means insupportable for men of much less prowess than was the hero to whom it belonged. Upon a table in the room were laid several books illustrating the history of *Gustavus Vasa* and of the province of *Dalecarlia*. This chamber was ornamented with portraits, very indifferently executed, of the Kings and Queens of *Sweden* since the time of *Gustavus Vasa*. There was also an immense genealogical-tree, exhibiting their pedigree. In the same room were figures, as large as life, representing the *Dalecarlians* according to their antient mode of dress, with high-crowned hats, white woollen clothes, and trowsers tied above the knee; bearing in their hands cross-bows, and having each a knife and a grease-pot suspended from a belt. These, they said, were the images of the very peasants who assisted *Gustavus Vasa* in making his escape. They were represented with long beards, and reminded us of some of the natives of the *Swedish Alps* which we had seen in the province of *Herjeådalén*. Here there is also an effigy of *Gustavus Vasa* himself, placed

beneath a canopy; and also of his page or esquire, in complete armour. The bed and the canopy terminate upwards in a point, upon which is placed a coronet. The complete preservation of this building will shew, to what a length of time the wooden houses of *Sweden* may be made to last, if they be kept dry and in good repair.

From *Stora Ornäs* to *Fahlun*, the roads, at this season of the year (*November*), are not good; owing, as we supposed, to the very considerable traffic which is carried on, in consequence of the mines, and the heavy burdens made to pass and repass. Upon our right appeared beautiful views of the Lake *Runn*. Just before we arrived at *Fahlun*, we had a prospect of the town, with all the buildings, machinery, and other works belonging to its antient mine; but in the midst of such columns of smoke, and fumes of sulphur, that it seemed as if the great bed of the *Solfaterra*, near *Naples*, had taken flight and settled in *Sweden*. As we descended towards the town, the houses appeared like so many tarred boxes, in the midst of a bleak and barren soil. We passed under the enormous moving levers which are employed in working the pumps. The wheels giving motion to these levers are kept in covered buildings: they are moved by over-shot falls of

Approach
to *Fahlun*.

CHAP.
IX.External
aspect of
its Copper-
Mine.

water, brought from the Lake *Runn*. The road leading into the town passes close to the edge of the stupendous crater which is now the mouth of its famous copper-mine. We shall say much more of it in the next chapter. Considered only as to its external aspect, it is one of the most surprising artificial excavations which exist in the world. Knowing of no other work of a similar nature with which to compare it, we shall call in the aid of the pencil to supply the deficiencies of verbal description: but the ingenious artist who has afforded to us the means of doing this, is himself unequal to the task of representing a scene of so much fearful grandeur. All the magnitude of this amazing result of human labour loses much of its effect by that minuteness of detail which is necessary to a faithful representation of the machinery belonging to the mine. While we are forced to acknowledge this striking defect in the best drawing we could procure of the *Fahlun mine*, we are consoled with the reflection, that even this will be deemed by our Readers much better than if no representation whatever were given of a work so renowned, and a scene so remarkable.



A. The great Crater.
B. Town of *Fahlun*.

C. *King Adol-Frederic's Shaft*.
D. Lowest point of the Mine.

CHAP. X.

FAHLUN TO SALA.

Antiquity of the Fahln Mine—Assessor Gahn—Copper-ore—Descent into the mine—Confagration—Method of excavating the ore—Manner in which it is found deposited—Accident which caused the present Crater—Tradition of the miners—Appearance of the descent—Names of the different openings—Increase of temperature in the lower chambers—View of the bed of fire—Council-chamber—Subterraneous stables—Stalactites of green-vitriol—Pumps—Mode of dividing the ore—Value of the

the Shares—Bergsmen—Valuation of the Lots—Produce of the Works—Present state of the Fahlun Mine—Works above ground—Vitriol manufactory—Remarkable form of precipitated copper—Process for concentrating the lye—Subsequent crystallization of the salt—Town of Fahlun—Wood impregnated with copper—Punishment of “Riding the great horse”—Public buildings—Geological features of Dalecarlia—Säter—Mines in its neighbourhood—Hedmora—Curious floating-bridge—Nuptial festivities—Annual return of Dalecarlian Peasants—Avestad—Character of the Swedish Peasants—Broddebo—Custom in passing a Robber's grave—Sala—Mines of Salberg—Nature of the ore—Decent into the Salberg—Minerals—Town of Sala.

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X.

Antiquity
of the
Fahlun
Mine.

“THE Mine of *Fahlun*,” we are universally told, “was worked before the Christian æra:” but who can pretend to determine any thing of *Swedish* history before the time of our Saviour? Much of the confusion which bewilders every research into the earliest *Scandinavian* annals has been caused by those writers who have laboured to establish a notion that this country was the original habitation of the *Goths*; whereas there is great reason to believe, that, in the beginning of our æra, the colony of the *Goths*, from whom the *Swedes* are descended, had not yet penetrated so far towards the north of *Europe*. Of all the ridiculous fables ever imposed upon a credulous world, that which would make of

Scandinavia "the storehouse of nations" is the most absurd: it is fitted only for the pages and the readers of such an author as *Sebastian Munster*¹. The first sight which a traveller has of the country is sufficient to remove every doubt upon this subject. Its unbroken forests, and a slowly advancing population, making the first essays of agriculture upon a land where there is not a vestige of any former inhabitants—excepting perhaps in the southern parts of this wild region, where a solitary *Celtic* mound, here and there², marks the sepulchres of a race of men who were never settled in the country, and with whom the *Goths* had no connexion—afford manifest proofs of the erroneous opinions which have been propagated, and which still prevail, respecting its antient history. There are no writers, says *Verdot*³, that are either so credulous or partial as those who have published an

(1) "Howe populous was this Country and other lying about it, manye great and wyse men doo wytnes, as Methodius, Martir, Jordanus, Gothus, and Paulus Diaconus, the which Authours do wyte that this people dyd swarme lyke Bees. And they call these Northe Regions the Storehouse or Carnar of Nations."—*North's Description of Sweedland, Gotland, and Finland, gathered out sundry later Authors, but chieftye out of Sebastian Mounster. Imprinted at London, Anno 1561, by John Awdely.*

(2) And of these, no traces exist farther towards the north.

(3) *Histoire des Révolutions de Suède*, tom. II. p. 252. Paris, 1696.

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entire body of the *Swedish* history: if we may give credit to their relations, that kingdom is the most antient monarchy in the world. And he afterwards adds—without undertaking to decide the celebrated question, whether *Sweden* be the original habitation or only a colony of the antient *Goths*—it is certain there is no fixed æra, in their annals, until about the middle of the twelfth century. This period commences with the accession of *Eric the Ninth*: all the preceding annals are embellished with fictitious wonders, extracted from old legends or antient songs. The heroes and princes of those remote ages are always represented as giants and magicians. Force was the supreme law; the power and violence of an oppressor entitled him to the respect and esteem of the people; and it was deemed inconsistent with the honour of a prince to marry a princess before he had committed violence upon her person¹. A fortunate murderer was not only admired as a hero during his life, but adored as a deity after death. In such a state of society, it is not very probable that the inhabitants of *Dalecarlia* were engaged in mining speculations; or that any work was

(1) "Un Prince auroit esté deshonoré qui auroit épousé un Princesse qu'il n'auroit pas ravie." *Vertot, ibid. p. 255.*

going on which required the aid of foreign commerce for its support. According to the authors of a late popular account of *Sweden*², the oldest charter of the mine of *Fahlun* is that of *Magnus Smeek*³, in 1347; from which it appears, that anterior documents existed among the archives of the crown. But these writers do not seem to have been aware, that, above a century before the time of *Magnus Smeek*, there was another King of *Sweden* of the name of *Magnus*, namely *Magnus Ladislās*, renowned in the *Swedish* annals for wiser counsels and for better sway; the same who caused the sovereignty of all the mines in the kingdom to be vested in the crown, and also accorded privileges to those mines, which seem to be the same they have alluded to. A record of the fact is mentioned by *Loccenius*, in his *Antiquities of Sweden*⁴; and *Messenius*,

(2) Voyage de Deux Français dans le Nord de l'Europe, tom. II. p. 241. Paris, 1796.

(3) Called, by the authors of the work above cited, *Magnus Smeek*. He was the most unsteady, weak, voluptuous, and arbitrary monarch that ever wielded the *Swedish* sceptre; elected King of *Sweden* A.D. 1319, at three years of age; and died in *Norway*, A.D. 1371. According to *Loccenius*, (*Hist. Suecana*, p. 106. Francof. 1676,) *Magnus* obtained the surname of *Smeek*, from his being duped by the specious promises of *Waldemar* king of *Denmark*. "Huic occasione imminens *Waldemar*, in *Scaniam* Magnum amicissimis literis illexit, et blandis verbis promissisque locatum, unde Magno postea cognomen *Smeek* adhaerebat," &c.

(4) "Vetustas tamen cęptę effossionis, quodammodo colligi potest ex Rescripto MS. Magni Ladilās, regis Svecię, Montanis Anno mclclxiv. Dicti Rescripti pars Latine versa sic habet. Eo quod vestra privilegia et antiqua

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in his learned and exact work¹, which enumerates, in chronological order, all the principal events of *Swedish* history to the beginning of the 17th century, notices the manner in which the sovereignty of the mines had been obtained. How long before that event this mine had been worked, or in what manner and in what age it was originally discovered, cannot now be ascertained². If any credit might be given to the traditions extant concerning it, all the *copper*

antiqua diplomata, quæ habebatis à nostris majoribus, nuper quum apud vos essemus, in curia illorum virorum, qui ea adservare debuissent, perierant, graviter errastis in eo jure, quo fodinæ metallicæ erigendæ ac stabilendæ erant. Deinde novo privilegio illud firmat."—*Johannis Loccenii Antiquit. Sveo-Goth. p. 82. lib. 2. cap. 17. De regni Sveo-Gothici fodinis metallicis. Francof. & Lips. 1676.*

(1) *Johannis Messenii Scandia Illustrata, tom. II. p. 60. Stockholmia; Anno Christi, 1700.*

(2) The following extract from the *Antiquities of Loccenius* ought not, however, to be omitted:—

"Certe illud verè affirmari potest, unà cum religione omnium aliarum rerum copiam, atque adeò ipsam felicitatem ad Gothos Sveonesque pervenisse. Satis constat, tum primùm auri, argenti, ferri, cupri, cæterorumque metallorum fodinas repertas: ut harum rerum copiâ nulli cæterarum regionum cederent, cum antea nullam haberent. (*Vastovius, in præfatione Vitis Aquilonaris, apud Loccenium, Antiq. Sveo-Goth. p. 83.*) Ex hac verò ejus sententiâ ante dccc. circiter annos (quo tempore Christiana religio huc primùm introducta est) inventas primò fuisse metallorum fodinas, statuendum foret. Sed eas antiquiores esse, constat ex *K. Suerris Saga*, ubi hæc exstant verba: 'JARNBER ALANDER UNDER SUJA KONG, OC VAR THA EN HEIDIT.' h. e. *Tractus aut terri ferri fodinarum Sueonice Regi subest, nec tum adhuc ad sacra Christiana conversa erat. Unde patet jam in paganâ religione ante Christianam in usu certè notitia fuisse; licet sub Christianâ religione magis magisque efflorescere potuerint.*"—*J. Loccenii Antiquit. Sveo-Gothic. lib. 2. cap. 17. p. 82. Francof. et Lips. 1676.*