

***CARL
VON LINNÉ***



THE LAPLAND

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Carl von Linné

The Lapland

Lachesis Lapponica

EAN 8596547000181

DigiCat, 2022

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PREFACE

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BY THE EDITOR.

The biographers of Linnæus have often mentioned the Journal of his Lapland Tour, to which he himself has frequently adverted, in various parts of his voluminous works, under the title of *Lachesis Lapponica*. The publication of this Journal has been anxiously desired; and so valuable was the manuscript considered, that on his whole collection and library being sold, after the death of his son, it was remarked that these papers at least ought to have been retained in Sweden, as a national property; the journey which they record having been undertaken at the public expense, and the objects illustrated thereby being, necessarily, more important to the author's countrymen than to any other people. This remark, however, was not made till long after the manuscript, with all the treasures which accompanied it, had escaped, by land and by sea, the pursuit instituted by the Swedish monarch to recover them, and had reached England in safety. It became a duty for their fortunate possessor to render them useful. To place the authority of this collection, as far as possible, out of the reach of accident, he has made it his chief object to extend any information to be derived from it, not only to his own countrymen, but to his fellow-labourers in every quarter of the globe. The Banksian herbarium was, in the course of seven months, compared with that of Linnæus throughout, to their mutual advantage, by a copious interchange, not only of information, but of specimens. Plants or insects were

for many years continually sent from France, Switzerland, Italy, Spain, Germany, and even Sweden, as well as from America, for comparison with the authentic originals named by the hand of Linnæus. The time and labour devoted to this task have been richly compensated, by the acquisition of various novelties, and of much instruction, as well as by the pleasure of so extensive an intercourse with persons occupied in the same favourite and delightful pursuit, and by the acknowledgements with which most of them have overpaid the trouble.

The manuscripts of Linnæus were no less freely consulted; but great was our disappointment to find the *Lachesis Lapponica* written in Swedish. For a long time therefore it remained unexplored. At length Mr. Charles Troilius, a young gentleman in the mercantile line, resident in London, undertook the task of translating it. The manuscript proved to be the identical journal written on the spot during the tour, which certainly rendered it the more interesting; but the difficulty of decyphering it proved from that very circumstance unexpectedly great. The bulk of the composition is Swedish, but so inter mixed with Latin, even in half sentences, that the translator, not being much acquainted with this language, found it necessary to leave frequent blanks, giving a literal version only of what he was able to read. The whole abounds also with frequent cyphers and abbreviations, sometimes referring to the publications or opinions of the day, and intended as memorandums for subsequent consideration. It is, in short, such a journal as a man would write for his own use, without the slightest thought of its ever being seen by any other person. The composition is entirely artless and unaffected, giving a most amiable idea of the writer's mind and temper; and it cannot but be considered as highly curious, to contemplate in these

pages the development of such a mind as that of Linnæus. As not a word throughout the whole was written for the use of any person but the author, the reader may perhaps be disappointed at not meeting with any thing like a professed description of Lapland, or even a regular detail of the route of the traveller. What was familiar to Linnæus, either in books or in his own mind, is omitted. By the brilliant sketches he has left us in his *Flora Lapponica*, published a few years after his return, we see what he might have written had he here undertaken to communicate his own knowledge or remarks to others; and the same may be said of such of his dissertations, in the *Amœnitates Academicæ*, as professedly treat of subjects belonging to Lapland. The curious and learned reader will, however, here and there, meet with the first traces of ideas, opinions or discoveries, which scarcely acquired a shape, even in the mind of the writer, till some time afterwards. If on the one hand the Journal may seem defective in communicating information, the occasional quotations, references and allusions, the familiar and sufficiently correct use of the Latin language, and the general accuracy of the whole, give a very high idea of the author's accomplishments. The extemporaneous journals of the most illustrious travellers, made without a single book to refer to, or a companion to consult, would few of them perhaps stand the test of criticism so well.

To render the translation fit for the public view, the editor found himself under the necessity of writing the whole over; but in doing this, though often obliged to supply the forms of whole sentences, of which only hints or cyphers exist in the manuscript, he has been careful to give as literal a translation of the rest as the materials would allow. This principle ever kept in view, and the difficulty of the undertaking, which, small as the book is, has taken up much

of his time for seven years past, must apologize for any inelegancies of composition. Yet in many parts the original displays a natural and striking eloquence, of which the translation may possibly fall short. Such passages, when they occurred, repaid the labour and perplexity of studying for hours to decypher some obscure mark, or some ill-written Swedish or Latin word, which the original translator had given up in despair.

The sketches with a pen, that occur plentifully in the manuscript, are not the least curious part of the whole. They are often necessary to explain descriptive passages in the work, and about sixty of them have been selected to illustrate the book. These have been cut in wood, with such admirable precision, that every stroke of the pen, even the most casual, is retained, and it is but justice to the artist, Mr. R. T. Austin, to record his name. Several plants, but rudely sketched in this manuscript, being more completely represented in the *Flora Lapponica*, it was thought unnecessary to publish such figures, except a few, for the sake of curiosity, or of particular illustration.

The notes are entirely supplied by the editor. Every name or remark that he has added to the text, is scrupulously inserted between crotchets; nor is there, throughout the whole, any one passage or word of the original author's so inclosed.

The "Brief Narrative," subjoined to the Journal, having been drawn up by Linnæus himself, to lay before the Academy of Sciences at Upsal, could not with propriety be omitted. Part of it throws great light on the body of the work; and though there are some repetitions, there is little that can be thought superfluous.

Norwich, April, 1811.

JOURNEY TO LAPLAND.

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Having been appointed by the Royal Academy of Sciences to travel through Lapland, for the purpose of investigating the three kingdoms of Nature in that country, I prepared my wearing apparel and other necessities for the journey as follows.

My clothes consisted of a light coat of Westgothland linsey-woolsey cloth without folds, lined with red shalloon, having small cuffs and collar of shag; leather breeches; a round wig; a green leather cap, and a pair of half boots. I carried a small leather bag, half an ell in length, but somewhat less in breadth, furnished on one side with hooks and eyes, so that it could be opened and shut at pleasure. This bag contained one shirt; two pair of false sleeves; two half shirts; an inkstand, pencase, microscope, and spying-glass; a gauze cap to protect me occasionally from the gnats, a comb; my journal, and a parcel of paper stitched together for drying plants, both in folio; my manuscript *Ornithology*, *Flora Uplandica*, and *Characteres generici*. I wore a hanger at my side, and carried a small fowling-piece, as well as an octangular stick, graduated for the purpose of measuring. My pocket-book contained a passport from the Governor of Upsal, and a recommendation from the Academy.

May 12, 1732, old style.

I set out alone from the city of Upsal on Friday May 12, 1732, at eleven o'clock, being at that time within half a day

of twenty-five years of age.

At this season Nature wore her most cheerful and delightful aspect, and Flora celebrated her nuptials with Phœbus.

*Omnia vere vigent et veris tempore florent,
Et totus fervet Veneris dulcedine mundus.*

Spring clothes the fields and decks the flowery
grove,
And all creation glows with life and love.

Now the winter corn was half a foot in height, and the barley had just shot out its blade. The birch, the elm, and the aspen-tree began to put forth their leaves.

Upsal is the ancient seat of government. Its palace was destroyed by fire in 1702. With respect to situation, and variety of prospects, scarcely any city can be compared with this. For the distance of a quarter of a Swedish mile it is surrounded with fertile corn-fields, which are bounded by hills, and the view is terminated by spacious forests.

I had no sooner passed the northern gate of the city than I perceived signs of a clay soil, except in the hills, which consist of sand and stones. The road here is level, and for a quarter of a mile destitute of trees. In ditches by the way side the Water Byssus was observable (*Byssus Flos aquæ*), particularly in places sheltered from the wind. It greatly resembles the cream of milk, and is called by the peasants *Watnet blommar*, or Water Flower.

A number of mares with their colts were grazing every where near the road. I remarked the great length of the young animals' legs, which according to common opinion are as long at their birth as they ever will be; therefore if a

measure be taken from the hoof up to the knee of a young colt, and so on from the knee to the extremity, it will give the height of the horse when full grown. A similar observation has been made on the size of the bones in the ear of an infant.

I observed the same kind of moss, or rather *Lichenoides terrestre*, *dædaleis sinubus*, (*Lichen nivalis*,) which is found on the hill near the palace at Upsal.

Geese were now accompanied by their goslings, which are all uniformly of the same yellow hue when hatched, whatever colour they may acquire afterwards.

I left old Upsal on the right, with its three large sepulchral mounds or *tumuli*.

The few plants now in flower were *Taraxacum* (*Leontodon Taraxacum*), which Tournefort erroneously combines with *Pilosella* (*Hieracium Pilosella*), notwithstanding the reflexed leaves of its calyx; *Draba caule nudo* (*D. verna*), which in Smoland is called Rye Flower, because as soon as the husbandman sees it in bloom he is accustomed to sow his Lent corn; *Myosotis scorpioides*; *Viola tricolor* and *odorata*; *Thlaspi arvense*; *Lithospermum arvense*; *Cyperoides* (probably some species of *Carex*); *Juncoides* (*Juncus campestris*); *Salix* (*S. caprea*?); *Primula veris*, as it is called, though neither here nor in other places the first flower of the spring; *Caltha palustris*, known by the name of Swedish Caper, as many people are said to eat it instead of the true Caper; the report of its giving a colour to butter is certainly false.

The lark was my companion all the way, flying before me quivering in the air.

*Ecce suum tirile, tirile, suum tirile tractat*¹.

The weather was warm and serene. Now and then a refreshing breeze sprang up from the west, and a rising

cloud was observable in that quarter.

Okstad (more properly Högsta) is a mile and a quarter from Upsal. Here the forests began to thicken. The charming lark, which had till now attended my steps, here left me; but another bird welcomed my approach to the forest, the Red-wing, or *Turdus iliacus*, whose amorous warblings from the tops of the Spruce Fir were no less delightful. Its lofty and varied notes rival those of the Nightingale herself.

In the forest innumerable dwarf Firs are to be seen, whose diminutive height bears no proportion to their thick trunks, their lowermost branches being on a level with the uppermost, and the leading shoot entirely wanting. It seems as if all the branches came from one centre, like those of a palm, and that the top had been cut off. I attribute this to the soil, and could not but admire it as the pruning of Nature. This form of the Fir has been called *Pinus plicata*.

Läby is a mile and a quarter further. Here the forest abounds with the Red Spanish Whortle-berry (*Arbutus Uva Ursi*), which was now in blossom, and of which, as it had not been scientifically described, I made a description; (see *Flora Lapponica*; and *Engl. Bot. t. 714*.)

A large and dreary pine-forest next presented itself, in which the herbaceous plants seemed almost starved, and in their place the soil, which was hardly two inches deep, all below that depth being pure barren sand (*Arena Glarea*), bore Heath (*Erica*), *Hypnum parietinum*, and some Lichens of the tribe called *coralloides*.

Above a quarter of a mile beyond the post-house, near the road, is a Runic monument; but I did not allow myself time to copy the inscription, finding it had lately been deciphered by somebody else.

A quarter of a mile further stands a land-mark of a curious construction, consisting of four flattish upright

stones placed in a square, with a fifth in their centre.

I discovered a large stone of the kind called *Ludus Helmontii*², and, wishing to break it, I took a smaller stone, which proved to be of the same kind. My endeavours were vain as to the former; but the small one broke into many fragments, and proved to contain minute prismatic crystals, which were quite transparent; some white, others of a deep yellow.

Before the next post-house, I noticed on the right a little farm, and on the other side of the way a small ditch used to wash in. Here stood a plain sloping stone of white granite, in which were three large dark-grey squares, seeming to have been inlaid by a skilful stone-cutter. It was evident, however, on examining one end, that they were continued through the whole substance of the stone.

Opposite to Yfre is a little river, the water of which would at this time have hardly covered the tops of my shoes, though the banks are at least five ells in height. This has been occasioned either by the water continually carrying away the loose sand, or, as I am more inclined to believe, the quantity of water is less than it has been.

Chrysosplenium (alternifolium) was now in blossom. Tournefort defines it *foliis auriculatis*, but erroneously, as the leaves are all separate and distinct³. It has eight stamens, placed in a quadrangular position, and two pistils. Thus it evidently approaches nearer to the *Saxifragæ*, as former botanists have justly thought, than to the *campaniformes*, or flowers with a monopetalous corolla.

At Yfre, two miles further, I noticed young kids, under whose chins, at the commencement of the throat, were a pair of tubercles, like those sometimes seen in pigs, about an inch long, of the thickness of their mother's nipples, and

clothed with a few scattered hairs. Of their use I am ignorant.

Near the church of Tierp runs a stream, whose bank on the side where it makes a curvature is very high and steep, owing to timber placed close to the water. The great power of a current, and the way in which it undermines the ground, is exceedingly visible at this place. Hence the strongest earthen ramparts, made with the greatest expense and labour, are often found insufficient to secure the foundations of large palaces or churches in some situations. But where timber has been used, the attacks of water are little to be dreaded. On both sides of the church were several small sepulchral mounds. It now grew late, and I hastened to Mehede, two miles and a half further, where I slept.

May 13.

Here the Yew (*Taxus baccata*) grows wild. The inhabitants call it Id or Idegran.

The forest abounded with the Yellow Anemone (*Anemone ranunculoides*), which many people consider as differing from that genus. One would suppose they had never seen an Anemone at all. Here also grew Hepatica (*Anemone Hepatica*) and Wood Sorrel (*Oxalis Acetosella*). Their blossoms were all closed. Who has endowed plants with intelligence, to shut themselves up at the approach of rain? Even when the weather changes in a moment from sunshine to rain, though before expanded, they immediately close. Here for the first time this season I heard the Cuckoo, a welcome harbinger of summer.

Having often been told of the cataract of Elf-Carleby, I thought it worth while to go a little out of my way to see it;

especially as I could hear it from the road, and saw the vapour of its foam, rising like the smoke of a chimney. On arriving at the spot, I perceived the river to be divided into three channels by a huge rock, placed by the hand of Nature in the middle of its course. The water, in the nearest of these channels, falls from a height of twelve or fifteen ells, so that its white foam and spray are thrown as high as two ells into the air, and the whole at a distance appears like a continual smoke. On this branch of the cascade stands a saw-mill. The man employed in it had a pallid countenance, but he did not complain of his situation so much as I should have expected.

It is impossible to examine the nature of the inaccessible black rock over which the water precipitates itself.

Below this cataract is a salmon fishery. A square net, made of wicker work, placed at the height of an ell above the water, is so constructed that the salmon when once caught cannot afterwards escape.

Oak trees grow on the summits of the surrounding rocks. At first it seems inconceivable how they should obtain nourishment; but the vapours are collected by the hills above, and trickle down in streams to their roots.

In the valleys among these hills I picked up shells remarkable for the acuteness of their spiral points. Here also grew a rare Moss of a sulphur-green colour⁴.

From hence I hastened to the town of Elf-Carleby, which is divided into two parts by the large river, whose source is at Lexan in Dalecarlia. The largest portion of the town stands on the southern side, and contains numerous shops, occupied only during the fairs occasionally kept at this place.

I crossed the river by a ferry, where it is about two gun-shots wide. The ferryman never fails to ask every traveller

for his passport, or license to travel. At first sight this man reminded me of Rudbeck's Charon, whom he very much resembled, except that he was not so aged. We passed the small island described by that author as having been separated from the main land in the reign of king John III. It is now at a considerable distance from the shore, the force of the current rendering the intermediate channel, as Rudbeck observes, every year wider. The base of the island is a rock. Only one tree was now to be seen upon it.

The northern bank of the river is nearly perpendicular. I wondered to see it so neat and even, which may probably be owing to a mixture of clay in the sand; or perhaps it may have been smoothed by art. Horizontal lines marked the yearly progress of the water. The sun shone upon us this morning, but was soon followed by rain.

Elf-Carleby is two miles and a half further. On its north side are several sepulchral mounds.

Here for the first time I beheld, what at least I had never before met with in our northern regions, the *Pulsatilla apii folio* (*Anemone vernalis*), the leaves of which, furnished with long footstalks, had two pair of leaflets besides the terminal one, every one of them cut half way into four, six or eight segments. The calyx, if I may be allowed so to call it, was placed about the middle of the stalk, and was cut into numerous very narrow divisions, smooth within, very hairy without. Petals six, oblong; the outermost excessively hairy and purplish; the innermost more purple and less hairy; all of them white on the inside, with purple veins. Stamens numerous and very short. Pistils cohering in a cylindrical form, longer than the stamens, and about half as long as the petals.

We had variable weather, with alternate rain and sunshine.

A mile from Elf-Carleby are iron works called Härnäs. The ore is partly brought from Danemora in Roslagen, partly from Engsiö in Sudermannia. These works were burnt down by the Russians, but have since been repaired.

Here runs the river which divides the provinces of Upland and Gestrückland. The soil hereabouts is for the most part clayey. In the forests it is composed of sand (*Arena mobilis* and *A. Glarea*). The post-houses or inns are dreadfully bad. Very few hills or lakes are to be met with in Upland. When I had passed the limits of these provinces, I observed a few oak trees only in the district of Medelpad.

1. "The lark that tirra-lirra chaunts."

Shakspear's Winter's Tale.

2. So I understand the original, which is *Lapis marmoreus polyzonos*.
3. Tournefort by this definition probably meant to compare the shape of the leaves, with the ears of some animal. In the criticism of Linnæus respecting the natural affinity of this plant, we may observe how his own system, professedly artificial, and yet so affectedly despised by some botanists for not being natural, led him to the real truth. In fact, some truth is to be learnt from every system and every theory, but perfection is not to be expected from any one.
4. This appears to have been *Bartramia pomiformis*, *Bryum pomiforme* of Linnæus. See *Fl. Lapp. n. 400*.

GESTRICKLAND.

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The forests became more and more hilly and stony, and abounded with the different species of Winter-green (*Pyrolæ*).

All along the road the stones were in general of a white and dark-coloured granite.

I noticed great abundance of the Rose Willow (*Salix Helix*), which had lost all its leaves of the preceding season, except such as composed rosaceous excrescences at the summits of its branches, and which looked like the calyx of the *Carthamus* (*Safflower*), only their colour was gone.

Near Gefle stands a Runic monumental stone, rather more legible than usual, and on that account more taken care of.

I noticed a kind of stage to dry corn and pease on, formed of perpendicular posts with transverse beams. It was eight ells in height. Such are used throughout the northern provinces, as Helsingland, Medelpad, Angermanland, and Westbothland.

May 14.

I left Gefle after divine service, having previously obtained a proper passport from the governor of the province and his secretary. I was well received and entertained by the Comptroller of the Customs, Lönbom.

At this town is the last apothecary's shop and the last physician in the province, neither the one nor the other being to be met with in any place further north. The river is

navigable through the town. The surrounding country abounds with large red stones.

At the distance of three quarters of a mile stands Hille church. Here begins a chain or ridge of hills extending to the next post-house, three quarters of a mile further, and separating two lakes. On its summit, a quarter of a mile from Gefle, a number of different sepulchral mounds are observable, composed of stones.

The Fir trees here all appeared tall and slender, and were laden with cones of three different stages of growth; some a year old, not larger than large peas, and of a globular figure; others two years old, ovate and pointed; and the remainder ripe, with their scales open and reflexed, having been four years on the tree.

In the marshes on the left the note of the Snipe (*Scolopax Gallinago*) was heard continually.

At the distance of a quarter of a mile before we come to Troye, on the right, are the mineral springs of Hille.

Troye post-house, which Professor Rudbeck the elder used to call Troy, is surrounded by a smooth hill.

The road from hence lay across a marsh called by the people the walls of Troy, a quarter of a mile in extent, destitute of large trees. The Sweet Gale (*Myrica Gale*), laden with catkins about its upper branches, was abundant every where, as well as the Dwarf Birch (*Betula nana*). These form a sort of low alley through which the road leads. This *Betula* had also catkins upon it, which are sessile and erect, not pendulous as in the Common Birch, about half an inch long and as thick as a goose-quill, situated about the lower part of the branches. The female catkins are more slender than the male, erect, and sessile upon the upper branches. Their scales ovate and almost leafy, green, pointed, three-cleft, with three pair of purplish pistils. Here and there grew the

Marsh Violet (*Viola palustris*), with its pale grey flowers, marked with five or seven black forked lines on the lower lip.

In the forest on the other side of this marsh were many kinds of Club-moss (*Lycopodium clavatum*, *Selago, alpinum*, and *complanatum*).

A quantity of large stones lay by the road side, which the governor of the province had caused to be dug up in order to mend the high-way. They looked like a mass of ruins, and were clothed with *Campanula serpyllifolia* (the plant afterwards called *Linnæa borealis*), whose trailing shoots and verdant leaves were interwoven with those of the Ivy (*Hedera Helix*).

On the right is the lake Hamränge Fjärden, which adds greatly to the beauty of the road.

The morning of this day was bright, but the afternoon was diversified with sunshine and rain, like the preceding. The wind however changed from north to south.

On the mountainous ridge at Hille, above described, I remarked on the ends of the Juniper-branches a kind of bud or excrescence, consisting of three leaves, longer than when in their natural state, and three or four times as broad, which cohered together except at their tips. They enveloped three smaller leaves, of a yellow hue, in the centre of which lodged either a maggot or a whitish chrysalis. (This produces the *Tipula Juniperi*. See *Fauna Suecica* 438, and *Fl. Suec.* 360).

I arrived at Hamränge Post-house during the night.

The people here talked much of an extraordinary kind of tree, growing near the road, which many persons had visited, but none could find out what it was. Some said it was an apple tree which had been cursed by a beggar-woman, who one day having gathered an apple from it, and

being on that account seized by the proprietor of the tree, declared that the tree should never bear fruit any more.

May 15.

Next morning I arose with the sun in order to examine this wonderful tree, which was pointed out to me from a distance. It proved nothing more than a common Elm. Hence however we learn that the Elm is not a common tree in this part of the country.

I observed that in these forests plants of the natural family of *bicornes* (with two-horned antheras) predominated over all others, so that the Heath, *Erica*, in the woods, and *Andromeda*⁵, in the marshes, were more abundant than any thing else. Indeed we meet with few other plants than *Vaccinium Myrtillus* and *Vitis-Idæa*, *Arbutus Uva-Ursi*, *Ledum palustre*, &c. The same may be said of the upper part of Lapland.

The spiders had now spread their curious mathematical webs over the pales and fences, and they were rendered conspicuous by the moisture with which the fog had besprinkled them.

The Red-wing (*Turdus iliacus*), the Cuckoo (*Cuculus canorus*), the Black Grouse (*Tetrao Tetrix*), and the Mountain Finch (*Fringilla Montifringilla*), with their various notes made a concert in the forest, to which the lowing herds of cattle under the shade of the trees formed a base. The weather this morning was delightfully pleasant.

Lichen islandicus grows abundantly in this forest.

After travelling about a mile and half from Hamränge I arrived at the river Tonna, which divides Gesträckland from Helsingland, and empties itself into the bay of Tonna. The

abovementioned lake, called by the inhabitants Hamränge Fjärden, extends almost to the sea. I was told it did actually communicate with the ocean. At least there is a ditch in the mountain itself, whether the work of art or nature is uncertain, called the North Sound, hardly wide enough to admit a boat to pass. This is dammed up as soon as the hot weather in summer sets in, to prevent the lake losing too much water by that channel, as the iron from several founderies is conveyed by the navigation through this lake.

5. It is a curious circumstance that Linnæus in his MS. here has the word *Daphne*; but his remark is not in any respect applicable to that genus, and he evidently can mean only *Andromeda polifolia*. He had not as yet named either of these genera in print. The origin of *Andromeda* will be explained hereafter, and the fanciful idea which gave rise to it had not perhaps at this time occurred. He therefore now either intended to call this plant *Daphne*, or he accidentally wrote one name by mistake for the other, having both in his mind.

HELSINGLAND.

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I had scarcely travelled a quarter of a mile beyond the river when I observed a red earth close to the road, which promises to be very useful in painting, if it should prove sufficiently plentiful, and capable of being cleansed from its impurities. The people at the next post-house informed me that the same earth, but of a much better quality, was found in the parish of Norrbo.

The Common and Spruce Firs (*Pinus sylvestris* and *P. Abies*) grow here to a very large size. The inhabitants had stripped almost every tree of its bark.

A number of small white bodies were hanging on the plants of Ling (*Erica*), of a globular form, but cut off, as it were, though not open, on the lower side, each about the size of a Bilberry (*Vaccinium Myrtillus*), and consisting of a thin white silky membrane. A small white insect was lodged within.

There were also affixed to some plants ovate white bodies of a silky texture, apparently formed of innumerable silky threads. These contained each a small insect.

A little further on I observed close to the road a rather lofty stone containing in its substance large fragments of *mica*.

At last to my great satisfaction I found myself at the great river Liusnan. From this part of the forest to the sea the distance is three miles. Here and there in the woods lay blood-red stones, or rather stones which appeared to have been partially stained with blood. On rubbing them I found

the red colour merely external, and perfectly distinct from the stone itself. It was in fact a red Byssus (*B. Jolithus*).

Many sepulchral mounds are in this neighbourhood.

Not far from Norrala, situated about a mile from the last post-house, the water in the ditches deposits a thick sediment of ochre.

Several pair of semicircular baskets made of wicker work were placed in the water, intended principally to catch Bream (*Cyprinus Brama*). Here I observed the Lumme, or Black-throated Diver (*Colymbus arcticus*), which uttered a melancholy note, especially in diving.

From Norrala I proceeded to Enänger, through a heavy fog, as it had rained violently while I rested at the former place. Towards evening it thundered and lightened. In the course of this whole day's journey I observed a great variety in the face of the country as well as in the soil. Here are mountains, hills, marshes, lakes, forests, clay, sand, and pebbles.

Cultivated fields indeed are rare. The greater part of the country consists of uninhabitable mountainous tracts. In the valleys only are to be seen small dwelling-houses, to each of which adjoins a little field. Even in these there is no great proportion of fertile land, the principal part being marshy.

The people seemed somewhat larger in stature than in other places, especially the men. I inquired whether the children are kept longer at the breast than is usual with us, and was answered in the affirmative. They are allowed that nourishment more than twice as long as in other places. I have a notion that Adam and Eve were giants, and that mankind from one generation to another, owing to poverty and other causes, have diminished in size. Hence perhaps the diminutive stature of the Laplanders⁶.

Brandy is not always to be had here. The people are humane and civilized. Their houses are handsome externally, as well as neat and comfortable within; in which respects they have the advantage of most other places.

The old tradition, that the inhabitants of Helsingland never have the ague, is without foundation. In every parish where I made the inquiry I found many persons who had had that disorder, which appears to be not unfrequent among them.

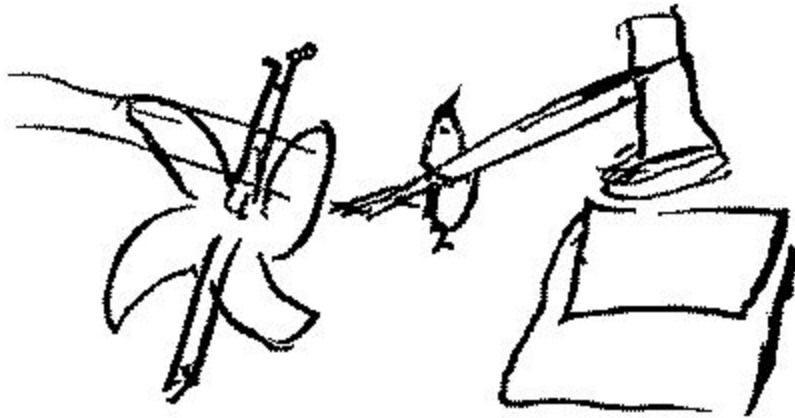
Here were plenty of Mountain Finches (*Fringilla Montifringilla*); but, what is remarkable, they were all males, known by the orange-coloured spot on the breast.

May 16.

Between Eksund post-house and Spange is the capital iron forge of Eksund, which has two hammers and one blast furnace. The sons of Vulcan were working in their shirts, and seemed masters of their business. The ore used here is of three or four kinds. First, from Dannemora; second, from Soderom; third, from Grusone, which contains beautiful cubical pyrites; fourth, a black ore from the parish of Arbro, which lies at the bottom of the sea, but in stormy weather is thrown upon the shore. At this place, as well as further north in the same district, a kind of blueish stone⁷ is used for building the tunnels or chimneys, which is considered as more compact and better able to resist heat than *Lapis molaris* or *Pipsten* (*Cos molaris*?). The limestone placed between the other stones was procured from the sea shore, and abounded with petrified corals.

Granite, I believe of all the different kinds existing in the world, abounds every where in the forests.

In every river a wheel is placed, contrived to lift up a hammer for the purpose of bruising flax.



When it is not wanted, a trap door is raised, to turn the stream aside.

Several butterflies were to be seen in the forest, as the common black, and the large black and white. Here I noticed *Lichenoides terrestre scutatum albicans*, (*Lichen arcticus*), which has larger fructification than the common *L. caninus*, with which it agrees in other respects, except colour. (See Linnæus's opinion respecting this Lichen, in *Fl. Lapponica* n. 442.)

By the road side between Nieutænger and Bringstad, a violet-coloured clay, used in building bridges, is here and there to be met with.

On a wall at Iggsund I found a nondescript hemipterous insect. (What this was cannot now be ascertained.)

Between the post-house of Iggsund and Hudwiksvall the abovementioned violet-coloured clay is found in abundance, forming a regular stratum. I observed it like wise in a hill near the water which was nine ells in height.

The strata of this hill consisted of two or three fingers' breadths of common vegetable mould; then from four to six inches of barren sand (*Arena Glarea*); next about a span of

the violet clay; and lastly barren sand. The clay contained small and delicately smooth white bivalve shells, quite entire, as well as some larger brown ones, of which great quantities are to be found near the water side. I am therefore convinced that all these valleys and marshes have formerly been under water, and that the highest hills only then rose above it. At this spot grows the *Anemone Hepatica* with a purple flower; a variety so very rare in other places, that I should almost be of the opinion of the gardeners, who believe the colours of particular earths may be communicated to flowers.

I observed that the mountains, after the trees and plants had been burnt upon them, were quite barren, nothing but stones remaining.

The produce of the arable land here being but scanty, the inhabitants mix herbs with their corn, and form it into cakes two feet broad, but only a line in thickness, by which means the taste of the herbs is rendered less perceptible.

Hudvikswall is a little town situated between a small lake and the sea.

Near this place the Arctic Bramble (*Rubus arcticus*) was beginning to shoot forth, while *Lychnis dioica* and *Arabis thaliana* were in flower.

The larger fields here are sown with flax, which is performed every third year. The soil is turned up by a plough, and the seed sown on the furrow; after which the ground is harrowed. The linen manufactory furnishes the principal occupation of the inhabitants of this country.

Towards evening I reached Bringstad. The weather was fine, it having rained but once in the course of the day.

May 17.

Continuing my journey at sunrise, I saw some sepulchral mounds near the church of Jättedahl. As soon as I had passed the forest, I overtook seven Laplanders driving their reindeer, which were about sixty or seventy in number followed by their young ones. Most of the herd had lost their horns, and new ones were sprouting forth. I asked the drivers what could have brought them so far down into the country. They replied that they were born here near the sea coast, and intended to end their lives here. They spoke good Swedish.

Near the post-house at Gnarp, to the westward, grows a birch tree, with more than fifty or sixty of those singularly matted and twisted branches which this tree sometimes produces.

6. The original is very obscure, and I have been obliged partly to guess at the sense of the intermingled Latin and Swedish. I beg leave to suggest that the deficiency of brandy among this sequestered people is perhaps a more probable cause of their robust stature, and even of their neatness and refinement, than that assigned by Linnæus.

7. Probably *Saxum fornacum*, Linn. Syst. Nat. ed. 12. v. 3. 79.