

swine, sheep, &c. To make them large, clever husbandmen have the *finesse*, **bruka kloke hushållare det grepet**, to employ "Hoeing" about the turnips when they have come up after the sowing, and have attained some size, [T. I. p. 232] that is, they cut away a part of the sown turnips so as to leave 9 inches between those that are left, for this purpose they employ a hoe, **en gräfte eller hacka**, whose blade is quite blunt and nearly straight at the end and nearly 6 inches broad. This space between the turnips, is so hacked up with this *instrument* that the soil becomes quite loose. In this loose earth the turnips increase so considerably, that they grow to a larger size than a man's head. They are afterwards used for different purposes, **til åtskilligt**. The sheep are either turned on to the turnip-land, yet on to a small part, a little at a time, **i sänder**, by means of a fold, where they not only have an abundant fodder from the turnips, but also manure the same field considerably by their dung; or the turnips are taken up as fodder for the sheep or other animals at home in the shed, **i huset**, or sold to such as have sheep or other animals to fatten, and so forth, so that they turn them to account in many ways. An old farmer told me that from a single "acre land," when the turnips grew somewhat quickly, he could commonly gain £14, £16 to £18 sterling profit, **inkomst**, only, however, if he had taken in this "acre land" at a certain time of year. *Obs.* The "hoeing instruments" which they used here in all places, exactly resembled the **hackar**, which they use in Sweden, *e.g.* at *Ultuna*, for hoeing tobacco, which may perhaps have originally taken their pattern from here in England.

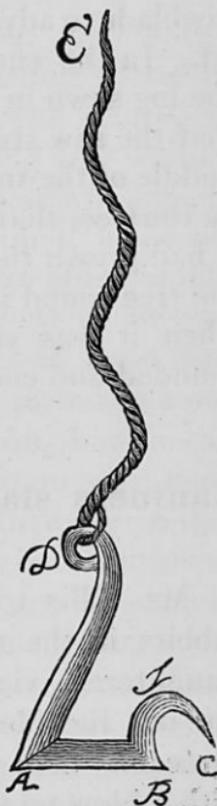
Mr. Ellis's *Four-wheel drill plough*.

In the afternoon I was at Mr. Ellis's, who then showed me the use of his newly invented four-wheel drill

plough. He to-day sowed a little wheat with the same. The land was first well ploughed, harrowed, and laid out in *broad-land*. One carl went and drew the plough, and [T. I. p. 233] another went after and steered. The use of this plough was that in front was set a little ploughshare, **plogbill**, which ploughed up the furrow into which the seed which is sown will fall. Immediately above this ploughshare, but farther back, was a little funnel, **tratt**, from whence the seed fell down behind the ploughshare into the furrow. Out of the funnel behind this fell the fine compressed manure on to the seed just sown, and last of all was set the harrow, which either had tines or iron blades, **tinnar eller järn skällor**, to harrow the seed again. In a word it was nearly of the same construction as that which Herr Probstén VESTBÄCK invented, and described in *Kongl Vetensk. Acad. Handlingar*. Mr. Ellis and I were not of the same opinion on this point. He flattered himself so much on his invention, that he also said that since Adam was made there has never been invented so useful an *Instrument* and *Machine* as this Drill-plough. I should too much weep for human-kind if this were true, for after Mr. Ellis had, with two carls, devoted the whole afternoon to using this plough, he had not succeeded in sowing a pint, **en kanna**, of seed. Scarcely was a half-furrow sowed before one was obliged to stand and attend to the plough. Now, the seed would not run; now, the mould stuck fast in the hole at the bottom of the funnel; now, the corn was not harrowed well down, so that there were here *frictiones frictionum*. Had man for all time past not been able to sow in a better manner than was done here to-day, mankind would long before this have died of hunger. I do not deny that if this plough is rightly worked and used, it may for some kinds of seed have its great service, as with pease, &c.

**Järn-broddar.** *Iron Crampoons for climbing up trees with.\**

At the house of a labourer I to-day got to see a particular kind [T. I. p. 234] of iron crampoons, which they use when they wish to climb up in any tree, either to take young squirrels, **Ikorn-ungar**, rooks'-nests, **Kråkbon**, or anything else; for as the trees here, for example the beeches, are for many fathoms in their lower part entirely without branches, and quite smooth, they can get up in no other way than by ladders, or with these crampoons. The former were too costly, and difficult to carry everywhere with them, but the latter not so. Their shape can best be seen from the accompanying Figure, where C B A D shows the whole crampoon, which is of iron, and D E the strap or band by which it is bound fast to the leg. A B is the part of the crampoon which comes to be under the shoes, and on which one stands when one climbs up. The length of the space between A and B is just fitted to the breadth of the shoes. C is the very point of the crampoon, **sjelfva uden på brådden**, which is always on the inner side of the foot towards the tree. The length from F to C is just two fingers wide. It is whetted as sharp as the sharpest and keenest knife's point that one may so much the better be able to strike into the tree with it. This point, **udd**, does not slope off in an *acumen*, like



\* "Crampoons (*Crampons* F.), pieces of iron hooked at the ends, for the drawing or pulling up of timber, stones, &c." Bailey, *Eng Dic.*, 15th Ed. 1753.

the point of a knife, but is more obtuse, and more nearly resembles a small punch, **hugg-bârr**, yet the point is not quite so obtuse, **trubbig**, but more oval. If it were as narrow-pointed as a knife, it could not then possibly be so strong, but would more easily break off.

[T. I. p. 235.] **Järn-spik funnen midt i en trä.**

*An iron nail found in the middle of a tree.*

Some carls were engaged to-day in sawing up some stocks into boards. As they were sawing a thick log, **klabb**, of ash in half they could not for a time get the sawblade to advance much, but several teeth therein broke off. In the end, after they had with much trouble got the log sawn in two, and would look what the reason was that the saw stuck so, they found a large iron nail in the middle of the tree. It was on all sides so grown round by the tree, that we could scarcely see otherwise than that it had grown there, for there was no rottenness visible in the tree round it. It was probably knocked into the tree when it was young, and afterwards became thus surrounded and enclosed by the tree.

*The 3rd April, 1748.*

**Kaniners slagt och gällning.** *The slaughtering and gelding of rabbits.*

Mr. Ellis told me that they here used to slaughter rabbits in the same way as a pig or other animal is slaughtered, viz., that they stick it in the throat and so tap out the blood, when the flesh will be much more agreeable than when they are killed in the usual way, with a blow on the nape of the neck, or as hares, **Harar**, are killed. He believed he was the first who had begun thus to take their lives by drawing off the blood. He also told me that he always caused some of the bucks to

be castrated, because their flesh has a much better flavour than when they are left ungel't.

**Spisars skapnad.** *The shape of the hearth.*

There is almost more wood burnt by one farmer and labourer, **Landtman**, in England than by one **Bonde**, &c., in Sweden. England lies some degrees more to the south, which diminishes [T. I. p. 236] the cold in the winter time. Therefore it is not extraordinary that there is so great a difference between the winters in England and Sweden, so that while the cattle in Sweden, must be fed for seven or eight months in the stable, they here go out almost the whole year, winter and summer. Many would therefore not be able to imagine that the English cottages, **stugorna**, in which the folk reside during the winter, were colder than the Swedish, and still less will anyone be able to believe that an English farmer, labourer, peasant, **Bonde, Landtman, Torpare**, or other, would burn as much if not more wood in the year than a Swede, especially because the winters here are so mild and short; and moreover, that the districts in most places near London are very woodless, **skoglös**, but for all that this is in most cases, and in a certain way, true. I will name the reason. The fireplaces, **spisarna**, are here mostly built, in all the ways in which we build them in Sweden, only with this difference, that here they never use a **spjäll**, or anything else in its place to retain the warmth; but a **spjäll** is to an Englishman who has never been out of England a thing so unknown, that it is difficult so to describe to him what a **spjäll** is that he shall understand it. No, here all the warmth goes freely up the chimney; windows, doors, roof, floor, &c., are not stopped or made tight, but the wind and cold get freely to play through them. There is no moss on the inner

side or in the middle of the roof. Therefore it is not wonderful, if in the winter time it is as cold in as it is out. In this country in the farm cottages, **bondstugorna**, the fire-hearth, **elds-härden**, is commonly so low that it is a *planum* with the floor itself. The chimney places, **spisarna**, in these are also so large, that three or four stools can be accommodated within the chimney-place, **spisen**, on which they sit to warm themselves. As soon as the wind begins to be somewhat fresh, as it commonly is from and in [T. I. p. 237] a great part of October, till and in a great part of April, wood is for the most part burnt on the hearth from morning till evening. Round it the folk sit and warm themselves and when the cold is somewhat more severe, the women are seen sitting near the fire, without doing the least thing, more than prate, **utan at göra det ringaste mer, an prata**. Therefore, also it is not wonderful that an English farmer, &c., burns in the course of the year, as much if not more wood than a Swedish **Bonde**. The same can also be said about an English townsman, **Borgare**, priest, *Gentleman*, &c.

*The 4th April, 1748.*

In the morning we walked about over very many arable fields to make our notes on their mode of Agriculture, &c.

**Jordmon härstädes.** *The soil hereabouts.*

I have said above that the whole of this district consists of bare hills. These hills are nothing else than solid chalk, for commonly when they dig 6 feet down into the earth, and often less, the chalk itself occurs, **tager sjelfra kritbäret emot**. The earth, **den jord**, which lies at the surface, is here everywhere of a brown colour, which inclines a little to yellow.

## Âkers-gödning, såning med Rofvor, upkörning, etc.

*The manuring, sowing with turnips, and ploughing of the arable fields.*

In one place a farmer was engaged in ploughing up his field, **at köra up sin åker**, which had before been manured and grown with turnips, &c. I asked him how he had treated this field? He answered: Last year, in May, chalk was carried into it, together with a large quantity of dung, which is here mostly bare straw, and which was all spread out and ploughed down. In June the whole of this enclosure was sown with turnip seed. In September, at Michaelmas, the sheep were turned on to it, where they had since been, and baited, **betat**, till [T. I. p. 238] this day. When it was sown with turnip-seed, **Rof-frö**, the field was laid out in *broadland*, and to-day, when it was being ploughed up anew, it was similarly laid out in *broadland*, in which they intended to sow barley this morning if the weather is fair. The sheep by their droppings, together with part of the half-rotted turnips, which have just been ploughed down, helped considerably to make the soil fertile. They first ploughed four to six furrows at both ends of the field, and across, **tvärs för**, the same, and afterwards ploughed the whole field lengthwise, **längs efter**, so that all the other furrows stood perpendicular to the furrows at the ends, which the horses always trampled down in the turning. I asked the reason why he did not plough the furrows, which had been ploughed at the ends, last, as we do? The farmer answered that if he should have so dealt this morning with, **som han i morgon torde vela så**, only a part of the field, for instance, as much as he will plough up to-day, then he would have been obliged to plough the *long-furrows*,

**lång-fårorna**, at the ends first ;\* for it should be noted that in private enclosures, **enskildta täppor**, there are never any **åker-renar**, “acre-reins,” or balks, in the midst of the field. Ditches, also, are never seen in these districts in the fields. The *Inclosure* looks inside as if it were only an **åker-stycke**, “field-plot” or “land,” which may be large or small, therefore when he ploughs the furrows at both ends, he ploughs them at once from the one end of the field to the other, by which means the labour is lessened. Also, if he had to-day ploughed in our way, viz.: laid out the field first in furrows, and afterwards drawn the *Cross-furrows*, **tvär-fåror**, at both ends, so as to plough up the land on which he turned the plough, or the “headlands,” he would then only have been able to plough up a piece of the *cross-furrows* at the ends (*i.e.* of the headlands); that is to say, so much as answered to the part of the field he had ploughed up to-day; through which he would have had more trouble than if he had driven the plough from one [T. I. p. 239] end to the other.

The fields were ploughed deep enough (as is said to be the case) to extirpate the weeds. It was the *Two-wheel single Hertfordshire plough* that was used for all this work.

For some purposes two horses were used; for others, three; again, for others, four; but if the ground was hard, as many as six horses were harnessed to the plough. Here the horses are always set in pairs before the plough, that is to say, two abreast, and not *tandem*, as is practised in some places. Several experienced farmers said that the fields are not manured with chalk oftener than every sixteen, eighteen, or twenty years. The reason given is that where it is manured oftener, the earth becomes too

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\* And would therefore have had to plough the ends twice over. [J. L.]

dry, loose, and friable, **luckor**, but the field is always manured with other manure every third year, industrious farmers even manure it thus every year.

### Trä-verket i Plogarna.

*The wood-work in the ploughs.*

All the wood-work in the ploughs hereabouts was of ash, which is a very hard and tough wood, except the "mould-board," **vänd-brädet**, which was mostly made of beech, because the ash is not always found of the thickness.

### Huru gamla Bök och Ek-stubbar, &c., upgräfdes, etc.

*How old beech and oak-stubs, &c., were dug up, &c.*

In one of the arable fields there was beside a hedge a long acre-rein, **åker-ren**, of 5 or 6 fathoms broad. Here and there, stood thick beech-stubs, **Bök-stubbar**, and now and then an oak-stub, **Ek-stubbe**. The trees which had grown on these stubs were for the most part cut down two years back. Here a carl was now engaged in digging and hewing them up, which he did thus:—He first hacked up the mould on one side of the stub, together with all the small roots and fibres, which proceeded from the same, with a mattock, **yxa**, of the shape shown in *Fig. A*. It was sharp and somewhat broad, [T. I. p. 240] at both ends, but with this difference, that the edge at one end was turned in the same way as the edge of an ordinary cutting axe, **hugg-yxa**, and at the other end as in a hoe or adze, **hacka eller skarf-yxa**, though the shape of this mattock neither resembled a cutting axe nor hoe. All these loose cut roots were collected together, and laid in small heaps to dry. After that he began to cut the stub to pieces, which he did

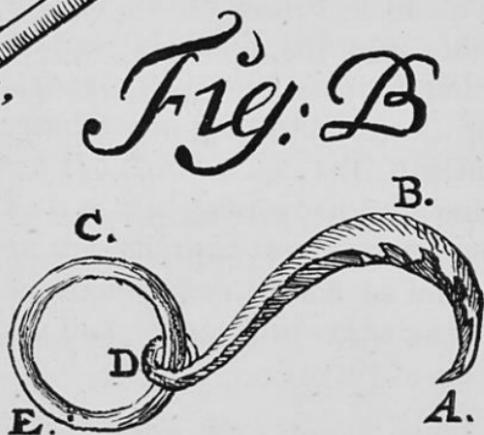
thus:—He had a lot of iron-wedges, **järn-viggor**, some of which he set in a row right across the middle of the stub, knocked in one after another, and by that means split the stump.

Afterwards the carl continued to set one iron wedge beside another, according as the rift in the stub increased in size, up to as many as four or more wedges, side by side, by which the stub was more and more split, and the half of the stub, which began to widen out from the other, always went towards the side on which the carl had previously dug away the earth, and hacked up the roots, because there was not the same resistance as on the other side.

As soon as he had thus got the stub tolerably broken to pieces, he used the iron hook, **järn-hackan**, (see *Fig. B.*) which he called 'Dog,' so as further entirely to sever and break off the half stub. In doing this he hung the hook, **haken**, D B A, fast on to the cloven stub, the point A being in the rift itself. Next, a strong pole, **stång**, also called 'Dog,' was set through the iron ring C D E, which pole was shod with iron at the end which is passed through the iron ring. At the end of this iron shoeing, **järn-skoningen**, were two iron teeth, **järntänder**, by which the dog, pole, or stang\* could be fastened into the stub. He then set this iron-shod end down in the ground, or near the roots of the stub, and began to bend the other end of the dog-pole, **stången**, down, when the point A of the hook drew and split off the half which had been loosened by the wedges from the other half of the stub. In the above described way they

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\* **Stang**, *Hop-dog*, S. An instrument "consisting of a long piece of wood, to act as a lever, with a piece of iron at the end, standing out a few inches, grooved, so as to make teeth to clasp the hop-poles and draw them readily from the ground. S[ussex.] Also used in Kent." W. D. Cooper, *Suss. Gloss.* 2nd Ed., 1853.



[To face p. 240.]



split the whole stub loose and to pieces. This dog was entirely, ring and hook, of iron. The diameter of the ring was 7 inches; the length of the hook, **kroken**, 1 foot; the breadth of the hook at B, where it was thickest, was 2 inches, and at the same part of the hook measured across, 1 inch, **derstädes på hakan en tum**. Inside the hook between A and B, were several scores, **inhuggna skårer**, so that it might get a better hold. After he had got up the whole stub, it was hewn and cloven to pieces for firewood. The reason, why the carl took up this stub was partly thereby to get firewood, partly and principally because he wished to take in this broad 'rein,' **ren**, to the ploughed field. He told me also that many acres of land, **många**, Acre-land, in many places hereabouts had been cleared and made into arable fields or meadows in the same way.

He drove down the iron wedges with a wooden beetle, **trä-klubba**, [T. I. p. 242] and when he went home, he had two boards of the length of the beetle nailed together at the sides *ad angulum rectum*, which he laid like a roof over the mallet, so that it might not take any harm from the rain.

**Måss nog på krit-jord.** *Moss enough on the Chalk-soil.*

I have said before (p. 237 *orig.*) that all the soil, **jordmon**, on this tract was nothing else than chalk-ground, **krit-grund**, none the less for that mosses will thrive incredibly on the same; for nearly all meadows, acre-reins by the hedges, pastures, commons, **utmarker**, in a word, all grass land, which is not often remade, **omlagad**, and manured was so overgrown with mosses, *Bryum and Hypnum*, that our most moss-choked meadows in Sweden can scarcely be worse. We remarked that in some of these moss-grown places there were here and there green plats, **plättar**, of a luxuriant green grass,

which is ascribed to the sheep-dung which they may have dropped on these places, or to some other manuring thing.

**Huru Bökar fällas omkull.** *How Beeches are felled to the ground.*

In this district the beech is the most plentiful of all trees. It is seldom cut down with an axe, but is sawn down with a long saw. The saw-cut is made quite close to the ground, or scarcely a hand's-breadth above the same. When somewhat more than half the tree has been thus sawn through, and it begins by its weight to press down on the sawblade so that it cannot be drawn forwards or backwards, they drive in iron wedges into the *kerf* or rift, **hålet eller rännen**, which the sawblade has made, and thus lift up the tree on one side, so that it cannot hinder the saw-blade by its weight.

**Bökars sönder-sågning och såg-spåns nytta.**

*The sawing up of beeches and the use of the sawdust.*

In one of the fields a carl was engaged in sawing up beeches into small boards [T. I. p. 243] to be used for shovels, **sköflar**. They had dug a pit, **et hål**, down in the ground, in the way which has been described on p. 220 (*orig.*), over which they laid the stocks, **stäckarnar**; when they were sawing, one carl always stood down in the pit, **gropen**. The tree was sawed first into logs, **klabbar**, of 3 feet long, these again into such small and thin boards as were required. The logs which had been sawn across were stood up on end, so that the one end stood down on the earth and the other up in the air. The upper end was covered for nearly an inch thick with the sawdust, **såg-spån**, which fell during the sawing. This was done with the object of preventing the log from forming any cracks or fissures from the sun. I asked whether this

sawdust was used for any other purpose? Several whom I asked about this gave me the answer that when it is dry, it is used as fuel, **til bränsle**, and that it is sold in woodless districts 'per bushels' or by the ton, **tunntals**, to be used for that purpose.

**Bökars ålder.** *The age of the Beeches.*

In one of the largest beeches which was here cut down we counted the sap-rings, **saf-ringarna**, to get to know the age of the tree, as well as to see how good the soil was to drive the tree quickly to size. Some four inches above the ground the diameter was 3 feet 6 inches exactly. We counted here eighty-six sap-rings, which showed that the age of the tree was eighty-six years. The innermost and outermost sap-rings were narrow enough, viz., from one-sixth to one-eighth inch thick, but at the time when the tree was about thirty years old it had made the strongest growth annually in thickness, for a single sap-ring was then often as much as half an inch thick. Seldom was there one under a quarter-inch thick, **Föga var någon under, &c.**, but they were commonly between a quarter and half-inch.

[T. I. p. 244.] It was very easy to measure the diameter of the stock, **stocken**, for it was cut down with the saw, **med såg kullsågad**. The length of this stock, from the large end to the little end, was 29 feet 6 inches. The sap-rings were afterwards counted at the small end, when the age of the tree showed sixty-five years. The diameter was here 19 inches; 2 feet 6 inches above where the tree was cut off near the root its diameter was 2 feet 8 inches. The periphery at the same place was 8 good feet.

**En eks ålder.** *An oak's age.*

An oak stub was measured to see how old it was, when we found from the sap-rings that its age was forty

years. Its diameter was 1 foot 5 inches. The sap-rings were very thick. The oak, according to the account of an old man, **en gubbe**, who owned the field, had been cut down for two years and carried away, so that we could not for that reason get to see its length. The soil of this tree was the same as has often been described above.

**Flinta jämn på en sida.** *A flint even on one side.*

We found here a large piece of flint, which on one side was as even and flat as a board.\* The breadth and length of this flat side was just a little more than, **vidpass litet mera än**, 6 inches. . [2½ lines omitted.] . . The surface of this flat side was blended with a half-petrified chalk. That it may not be relegated to oblivion, I will now remind you that in this district round about *Little Gaddesden* there is not found any other kind of stone than ordinary flint and "Puddingstone," or conglomerated masses thereof, **sammangyttringar deraf**.†

**Arbets-karlars skor.** *Labouring men's shoes.*‡

The shoes which the labouring men [T. I. p. 245] commonly used were strongly armed with iron. Under the heel was set an iron which followed the shape of the heel, and somewhat resembled a horseshoe.§ Round

\* These beds of tabular flint occur in the lower part of the upper chalk. [J. L.]

† A man sinking a well in gravel near Bedale, Yorkshire, told me he came upon a "samman" at the depth of 25 feet, and on his showing it to me, it proved to be a mass of conglomerated gravel. Near London these are often called "Rock." [J. L.]

‡ Grose gives a proverb, "Hertfordshire clubs and clouted shoon," which latter, as Fuller observes, being worn by the tenants, enables their landlords to wear Spanish-leather boots and pumps. Grose. *Local Proverbs*, 1790, 8vo. [J. L.]

§ Clouted Shoon. "CLUTA. *Clouted-shoes*, or horse-shoes, also *strakes* of iron with which cart-wheels are shod." Bailey, *Eng. Dic.*, 1736, 15th Ed., 1753, 8vo. "CLOUT. *v.* to piece or mend with cloth or iron." F. Grose, *Prov Glos.*, 2nd Ed., 1790, 8vo. [J. L.]

about the soles were nails knocked in quite close beside each other. It was also knocked full of nails under the middle of the sole, far more than under our dalesmen's shoes, **Dalcarlars skor**,\* so that they can go with these a long time before they are worn out. They had sometimes gaiters, **lösa stöfvel-skaft**, which were not fastened to the shoes, but were used in the same way as *damascor* with us in Sweden, only that these are strapped together on the outer side of the leg.

**Tegel af den gula jorden.** From the reddish-brown earth inclining to yellow, which everywhere here lies immediately upon the chalk, they make and burn their bricks, **Tegel**, here. Some are said to make bricks of it without adding any sand. This yellow earth looks like a yellowish-red clay, **gulrod lera**, and is very tenacious and binding.

In the afternoon we walked a long time about the arable fields and pastures with Mr. Williams, a farmer here in Little Gaddesden, who of all who lived here was indisputably the greatest *Practicus* in Rural Economy. He counted it a special pleasure to relate to me his different contrivances in farming economy, **sina hvar-jehanda hushålds grep**. When we got to see his arable fields and meadows, with their state and manner of cultivation we could not sufficiently admire them, for they excelled many fold both Mr. Ellis's and the other farmers' arable fields. Indeed, all that belonged to Mr. Williams out of doors and at home in all departments of Rural Economy was such that the others could not come near it.

[T. I. p. 246.] **Åkrens gödning.**

*Manuring the ploughed fields.*

If practicable, and the season permits, he causes his

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\* Dalecarlia is in Swedish, "Dalarna," *the dales*. [J. L.]

labourers to manure his arable every year with the manure, which results from the cows, sheep, and horses, in the manner which shall be described further on. The time of year when he has this manure carried out is in the winter, on the days when the weather is such that he cannot use the horses for any other field work, **åkerbruk**. As regards manuring with chalk, he had the same story as has been mentioned above (p. 239 orig.).

### **Nedhuggna häckar til bränsle.**

*Cut-down hedges as fuel.*

When Mr. Williams cuts down an old hedge to make a new grow in its place, he employs, as is usual, part of the cut-down hedge for the erection of a dead fence; but the other part, which is over, and is the most, be it twigs or thicker timber, **qvistar eller tjockare virke**, he has cut shorter, to 3 feet or 4 feet long, binds it into small bundles, and sells as fuel to the surrounding inhabitants who have need of such, or it is left for payment of the day labourers and such like folk who work for him,\* **til betalning åt dagsverks-karlar, som arbeta hos honom**. For two or three logs of the larger timber, each of which is little thicker than an arm, he gets as much as for a bundle of twigs, **en knippa af qvistar**.

### **Ärt-land.** *Pease land.*

We accompanied Mr. Williams over one of his arable fields, which was entirely sown with different kinds of pease. The field consisted of 10 acres of land, **Åkern bestod af 10 acre land**. The pease were now getting on for 3 inches high. When the pease stalk is 3 or 4 inches long, a

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\* Payment in kind is not even yet wholly extinct, as in the neighbourhood of Kelso. [J. L.]

roller is driven over the field to make it flat. He said that the pease take no harm at all from it, but it is useful to them. Part of these had been sown for eight weeks. *Maple Pea* for about three ditto.

[T. I. p. 247.] *Viciœ, Tares, &c.*, sown for horses. On several arable plots, **åker stycken**, they had some *Viciœ* or **Vicker**, *Vetches*, of different kinds. One of these sorts was much praised. They were sown there last autumn on *broadland*, and had the peculiarity that they endured the winter cold, and were already nearly three inches high. In the month of May he has them cut, and gives the green stalks, **halmen**, to the horses, for which they are very wholesome. This purges them and makes them fat and in good condition. After they have thus been cut in May, they stand and grow, either to be again cut once more towards autumn, or to be left for seed.

One and another large arable plot was also sown with clover, which now stood very beautiful and green.

### **Gropar der de fordom tagit Krita.**

*Pits, where they formerly have taken Chalk.*

We saw in several places in the fields, and also on the pastures, large deep pits, where in former days they have taken chalk, either for manuring the fields or for something else. In most of such old pits, not only was the bottom overdrawn with thick grass sward, but in some stood high and thick beeches. On all the hill slopes, **backar**, round about this tract such old pits appear.

### **Bökar skadeliga för häckar.**

*Beeches injurious to hedges.*

Everywhere here in the hedges round about the arable fields there grew large and high beeches. Many inclosures were so surrounded by them, as if by a hedge. Mr. Williams said that these did the arable field little service,

partly because with their widely outspread roots they drew the nourishment, **födan**, both from the crops sown on the arable, and from the other trees in the hedge, partly and principally that by their shade, and the dropping of the water from their branches [T. I. p. 248] and leaves, they, as it were, killed the hedges and trees which grew under them, of which, **hvarpâ**, plain proofs were everywhere visible, for under all these trees the hedges were very poor and thin, **usle och glöse**, not to mention that these, by their shade, incredibly furthered the growth and increase of the mosses, especially in the meadows and pastures lying on the north side of them, where it was always found that the moss under their shade throve best of all, and thence afterwards extended along the surface of the ground. But the farmers must endure this, for they had not liberty to hew down so useful, and for the country so ornamental a tree, more than was absolutely necessary; because few of the farmers owned the farms they lived upon themselves, but rented, **arrederade**, them from others.

#### **Sot til gödsel.** *Soot as Manure.*

Several arable fields were shown us just sown with wheat, on which Mr. Williams had soot strown as manure. He had bought it in London, and conveyed it from thence hither, so that it had cost him tenpence a bushel before he got it here, which cost however he did not grudge, for he reckoned soot as one of the choicest manures on the field. He had also strown some of it over the grass-sward, **gräsvallen**, on some of the small enclosed meadows, which he said was partly because it was very manuring, and partly because the mosses were destroyed by it.

#### **Ek-bark åt Garfvare.** *Oak bark for Tanners.*

About three or four weeks after this, they begin to fell

oaks, and strip, **flå**, the bark off them to sell to tanners. They now get commonly a shilling for a yard of it, that is of the bark, 'stapled,' **upstaplad**, or piled up in the cubic yard.

### **Bök och Ek-ollon til föda för Svin.**

*Beech and Oak mast as food for Swine.*

From the Beeches which here grew in abundance, were collected [T. I. p. 249] annually a great number of beechnuts with which the swine are fed, who flourish and grow very fat on them. In the same way, acorns are gathered as food for pigs; yet they do not willingly eat acorns as their food as against beech-nuts, **dock spisa de samma i godhet til deras föda ej up emot Bök-ollon**. Some lost a great many swine last year, which happened through this, that they gave them acorns to eat before they had lain any time, and had, as it were, been prepared for food, through which the swine died. This could never happen with beech-nuts, which they can eat without harm as soon as they fall down from the tree.

*Genista Spinosa* **at bränna tegel med.** *Furze* [*Ulex Europaeus*] *to burn bricks with.*

I have said before (p. 199 *orig.*) that they almost everywhere in these woodless districts use *Genista Spinosa Vulgaris*, *Raj. Syn.* 475, as fuel in fireplaces, **i spisar**. Mr. Williams now told me that it is also used in this district to burn bricks with, when they collect it in small bundles, dry them, and during the brick-burning stuff these bundles into the brick-kiln, instead of other wood. I also saw afterwards at the brickyard, which belonged to the Duke of Bridgewater, that this, like the brackens, was collected and arranged there in heaps by the bundle, **lagd der i högar knipptals**, so as to use it as fuel during the brick-burning.

**Aska til gödsel på ängar.** *Ashes as manure on meadows.*

Mr. Williams had strown ashes over the grass-sward in one and another of his meadows, partly to destroy the moss, partly by this means to increase the growth **gräsväxten**, for he counted ashes as a beautiful manure on meadows.

**Dikes-jord til gödsel.** *Ditch earth as manure.*

Down in a dale a ditch had newly been thrown out. The earth, **jorden**, which had been taken out of it, was arranged in heaps alongside of the ditch, to [T. I. p. 250] lie some time, but afterwards it would be carried out on to the ploughed field, spread out, and blended with the other soil of the ploughed field, **åker-mullen**, as a manure. This earth which was dug up out of the ditch, **diket**, was mostly a beautiful soil, **en skön svartmylla**.

**Nyttan** af the two-wheel double Hertfordshire Plough, **eller den tvåhjulade dubbla Hertfordshire plogen**.

We afterwards accompanied Mr. Williams home to his farm, where he showed us the two-wheel double Hertfordshire Plough which no one else besides himself in the whole of *Little Gaddesden* had. It is well-known that this plough consists only of one plough-beam, **plog-ås**, but on this beam there are two ploughs, the one before and the other behind, **den ena framföre, den andra bakefter**. **Plog-åsen**, the *plough-beam* makes a bend, **en krok**, between the two ploughs, through which it happens that each plough ploughs a separate and new furrow, so that the latter plough turns over its furrow on to the furrow which the first plough has made. Thus this plough casts up two furrows at one time, and, as all *wheat* fields hereabouts are mostly laid out in *two-bout-*

lands or what they here call *four-thorough-stitches*,\* *i.e.*, ridges, **ryggar** or "*rigs*" consisting of four furrows, so this double plough effects the saving of labour, that while others must plough twice forwards and twice backwards, to make such *four-thorough-stitches* or *riggs*, consisting of four furrows, it is not necessary with this plough to plough more than once forwards and once backwards, when the field similarly becomes so arranged.

Mr. Williams showed me quite large ploughed plots **åker-stycken**, which he had laid out with this plough in *two-bout-lands*. When this plough is used, three pair of horses must always be set before it, whereas before other ploughs no more than two pairs or less, are required. [T. I. p. 251.] The field ought also to be very loose and dry, where this plough is to be used; for if the field is not loose and dry, Mr. Williams said he never uses it, because it then becomes so heavy that no horses can draw it, **årka draga den**. The plough-beam and wood-work should also be very strong, if it is otherwise to stand the work, **om den annars skal hålla**. In a word, in loose soil and sandy earth, **uti lös-mylla och sandjord**, this is of great service, but not so in clay, **lera**, and hard fields.

### Halm af Korn, Hvete, Ärtor, Bönor, etc., til gödsel,

*Straw of barley, wheat, pease, beans, &c., as manure.*

Here and there in his farm yard, **fä-gård**, there stood **racks**, **häckar**, under the open sky to lay fodder, **foder**, in for the cattle. The racks were made of two long hurdles, **grindar**, such as are used in Sweden in the stalls for horses, to lay their hay in. Two such long hurdles were fastened together at their lower ends, and

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\* "One bout" is once up the field and back. "Four thorough stitches," = "four-furrow stitches." [J. L.]

the upper ends widened out from each other so that they thus formed a *rack*, **en häck**, in which the fodder could be laid. This *rack* stood upon two trestles, **bäckar**, of wood, viz. : one under each end, of such a height as was most suitable for the cattle to be able to reach up to the fodder. In these racks was laid straw of wheat, barley, oats, pease, or beans, as well as hay, of which the cows and sheep got to eat at nights. The cows stood at home the whole winter, day and night, and ate of the fodder in these racks when they would ; for they went loose in the farmyard, but the sheep were only at home in the yard when it was rainy and bad weather, for otherwise they were folded, **fällades**, at nights out on the arable fields or went in the *inclosures*. Of this straw in the rack the cattle, **Kreaturen**, ate part, and part they drew down under-foot, which was afterwards spread out over the whole farmyard, and was left for them to lie and trample upon.

[T. I. p. 252]. It goes on like that the whole year, whence the thickness of the straw that lies spread about all over the farmyard is considerably increased. The cattle continually let fall their droppings thereupon, besides any refuse which is cast there. When this collection has risen to some considerable quantity, it is then shovelled, **skättas**, together into great heaps, which commonly happens in the spring season, and is left so to lie and ferment, **brinna tilhopa**, for a time, viz., for three or four weeks, not more, because it takes harm. By this means a farmer can obtain a quantity of beautiful and choice manure for his arable. This mode of providing himself with manure **at skaffa sig gödsel**, is practised by one and all of the farmers here in Little Gaddesden, as well as in the parishes round about. I saw not only the farmyards full of trampled straw or "haulm," **halm**, of all the above named kinds

of crops, but in many places *Brackens*, **Ormbunkar**, mingled with them, to increase the manure. In or outside the farmyards I saw everywhere large haulm heaps, **halm högar**, piled up, which are left to lie and ferment. This manure so prepared is afterwards carried at a convenient opportunity out on to the ploughed fields in carts, **kärror**, where it is laid in small heaps close beside each other, spread out and ploughed down. It is especially carted out at a time when wet weather hinders them from using the horses for ploughing. When this farmyard manure, **halmen**, is thrown out, **måkas**, or shovelled, **skåttas**, in heaps, there is nearly always some mould, **mull**, cast over the haulm-manure, **halmen**, or it is covered with it, that the sun may not get to dry it too much, and draw the "nature," **kraften**, out of it. These dunghills always lie under the open sky, although a shelter, **skjul**, might be better.

### Åtskilligt slags foder åt hästar.

*Different kinds of fodder for horses.*

Mr. Williams took us out to his stable, to see in what way [T. I. p. 253] he uses to feed and fodder, **föda och fodra**, his horses. Here he had with a steel-mill, **stålqvarn**, caused to be chopped up, **låtitt sönderkrossa**, the kinds of peas which were called *Maple Pea* and *Grey Pea*\*, into large pieces, mixed with it 'malt-dust' or **malt-fän**, together with white and black oats, which he gave several times a day to his farm horses, which thrive upon it incomparably well. This fodder was given them morning noon and night, and

\* These are still so-called, 1886. I find also in Ray's "*Synops s.*" 318:—

(2) *Pisum arvense flore roseo fructu ex cinereo nigricante, &c. Gray pease.* . . .

(3) *Pisum arvense flore roseo fructu variegato.* . . . *Maple pease.*

just as it was required, but their ordinary food was the following chaff, **hackelse**: He had the haulm of barley and pease, wheat-awns and ears chopped up, and with this was put a little of the straw about 4 inches long, more or less, together with hay. This was all cut up so small, that it was little larger than coarse cut tobacco. After that they had blended all these together, and laid it dry in the crib for the horses, who ate it willingly and flourished well on it.

*Strata uti Kritgropar, in chalk pits.*

In the hill, **backen**, on which Little Gaddesden was built, there was a chalk pit from which they had in former times taken chalk. Here the strata were in this order:—

	Ft.	Ins.
1. The top soil, <b>svartmyllan</b> , or the brick-colored earth, consisted of decayed plants and the brick-colored clay and chalk, in some places $\frac{1}{2}$ ell, in other places 1 ell ... ..	2	0
2. Chalk of the ordinary loose kind [shrave], 6 ells	12	0
3. A stratum of the brick-colored clay, 3 inches ...	0	3
Total ... ..	14	3

**Mält-hus.** Besides that Mr. Williams was a great farmer, he had also large profits from malting, at **han mältade malt**, and sold it to [T. I. p. 254] all the surrounding inhabitants. He showed us the malthouse, which was large enough. The floor was made of the stone called *Freestone* which is dug six English miles from hence, and which is brayed to dust, **bokas sönder til stoft**, mixed with water, and prepared as clay, **ler**, and after that the floor of the malthouse is made of it. The floor was somewhat sloping, so that the water could run

off from the malt. This *Freestone*, together with the pit or mine, **grufvan**, from which it is taken shall be described farther on. [Totternhoe Stone.]

### Stål-qvarnars bruk, at mala Malt och Ärtor.

*The use of steel mills to grind Malt and Pease.*

Here were shown to us two steel mills, one of which Mr. Williams used to grind malt in, and the other to crush to pieces the pease which he mixed with oats as food for the horses. They both had a large fly-wheel, **sväng-hjul**, which made the labour lighter for those who had to work them.

*The 5th April.*

In the morning we took one of the smaller farmers or **Landtmän**, who was known for Agriculture and Rural Economy, with us, and started on the way to *Ivinghoe*, which lay in Buckinghamshire, four miles N.W. from Little Gaddesden, which lay in Hertfordshire, on the borders of Buckinghamshire. The object of this walk was to see the district around Ivinghoe because Mr. Ellis told us that the appearance of the country and the soil, **jordmon**, was entirely different from what there was at Little Gaddesden; for at Little Gaddesden is "Chilturn Land," but around Ivinghoe "Vale Land." That land which consists of high hills and the chalk formation is called 'Chilturn Land.' 'Vale Land' consists of large plains and flats, **stora fält och slättar**, and lies mostly in valleys.

[T. I. p. 255.] *Agrifolium*, Holly, of a considerable size. In a hedge, a little away from a farm, we saw a tree of *Agrifolium*, *Raj. Syn.* 466, [*Ilex Aquifolium*] which was one of the largest I had hitherto seen in England. We estimated that the height of this *Agrifolium* was 36 feet, and it would certainly have been higher if it had not been cut off at the top. We measured the periphery 2 feet

above the ground, where it was 4 feet 6 inches. The stem was, for a length of 16 feet from the roots, quite straight and smooth, only that here and there on the bark grew small protuberances, **knylor**, in size and figure like hazelnuts. These were hard and woody, but seemed not to have any communication with the tree itself inside the bark. We had previously found on beeches just similar protuberances and of the same description. The carl who accompanied us knew no other use of this tree than that it is used for fuel.

**Sädes-stack på stälpar.** *Ricks upon posts.*

In one place and another we saw ricks built in the same way as has been described before (p. 229 orig.), viz., standing on posts, **stälpar**. The posts were at the middle surrounded by polished brass, to hinder the ascent of mice into the rick, which here consisted of wheat, and was called by our guide a 'wheat frame.'

**Skått-kärra.** A boy came along pushing a very large *wheel-barrow*, loaded with furze for fuel, which he had cut on the large dry common, **fält**, which lay close by. The body of the barrow, **kärran**, was built like a *sled*, **skrinda**, only that at the back or towards the handles, **skalmare**, there was no *frame*, **grind**, but it there stood open. In short, there were high frames, **grindar**, where in ordinary wheel-barrow there are boards in front and at the sides.

[T. I. p. 256.] **Stort fält.** *A large Common.* [Ivinghoe Common.]

We had the whole way, almost as far as Ivinghoe, on the right hand *inclosures*, or **täppor**, of arable fields, meadows and pastures, fenced in by living hedges, and sometimes a farm;\* but on the left hand was a very large

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\* The farm of Ward's Hurst. [J. L.]

down and common, \* **mycket stort fält och utmark**, which to the view seemed somewhat to resemble our arid, sterile **Ljung-hedar**, Lingheaths, in Sweden, only that no ling was found on this one, and that the land did not here lie flat, but rose by degrees, and by degrees fell off again, or sloped downwards. It was nearly all overgrown with *Genista Spinosa*, furze, which here was not much over 4 inches high, because it is altogether cut down by poor folk close to the ground, and is carried home for fuel. The whole plain, with much more, belonged to the Duke of Bridgewater. [This is the same elevated plateau described at T. I. pp. 197-8, and p. 197, above.]

### **Jordmon i dällderna, en flint-sand och des nytta.**

*The soil in the dales a flint-sand, and its use.*

It was curious, that for the most part down in all the dales between the hills, the soil consisted mostly of pure flint gravel, or a coarse sand, **bara flint-grus, eller en grof sand**, which was not such as our most common sand in Sweden, viz., of quartz, but it consisted of bare flint, such as is found everywhere about here, which had been reduced to a coarser or finer sand. From some little mixture of chalk soil, **krit-jord**, amongst it, the colour of this deposit was a rust-colour. We sought diligently a long time to see whether we could not find any grains of quartz, **sand-korn af Q.**, but in vain. Nor was there found here any other kind of stone, large or small, but flint. Those who live in this district, mix this sand with clay [T. I. p. 257] of which they make and burn bricks, and when they build a house it is mixed with lime.

**Kalk af Krita.** *Lime from Chalk.*

I enquired of the carl who accompanied us what kind of

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\* Ivinghoe Common. [J. L.]

lime they use here for their houses, and where they get the same? He answered, that they dig up ordinary chalk out of the chalk hills, lay it together in heaps, and burn it in the same way as is usual in burning lime from limestone, **kalk-sten**, when the chalk, after it has been burnt, is reduced to a fine powder or meal, which is an ordinary lime. With this lime blended with flint-sand, they build all their brick or stone houses. All those who lived round about this place, told me as a very well known and common thing, that the chalk is burnt by them everywhere to lime, by being laid in lime kilns, **kalk-ugnar**, and after burning is slaked, of which more further on.

**Näslor til grönkål.** *Nettles as Green-meat.*

When the nettles first come up in the spring, they are plucked by the women, and prepared as green-meat, **grönkål**, in the same way and method as we in Sweden prepare *Spinat*. They here maintain that nettles prepared thus or in any other way, and eaten, are very wholesome, and purify the blood.\*

**Dagg-maskar, en begärlig mat för Anckor.**

*Earth-worms a favorite food of Ducks.*

Everywhere on the range, at *Little Gaddesden*, as well as the villages round about, the whole of the ground appears to be full of worm-holes. Close to all these holes are found small heaps of fine mould, **mull**, which the worm had heaved up when it made the hole [worm-

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\* NETTLE SALAD. I enquired at Ivinghoe whether this is still made. The negative answer is inconclusive, as it is still prepared in Surrey, 1886, where they only call them *boiled nettles*. Sir W. Hooker (*Flora*, 5th Ed. 1842) says: "In Scotland the young tops of nettles are boiled and eaten by the common people." (*U dioica*, p. 296.) Sir W. Scott also: "Nae doubt I suld understand my ain trade of horticulture, seeing I was bred in the parish of Dreepdaily, near Glasco', where they raise lang-kail under glass, and force the early nettles for their *sprig kail*." Andrew Fairservice in *Rob Roy*. [J. L.]

casts]. Around *Woodford*, in Essex, the ground is in the same way full of worms and their holes. I saw to-day that a troop of ducks waddled about and, as it were, sought for something. I asked the carl who accompanied us if he knew what they were seeking for? He answered that in the evenings and very early in the morning the worms creep out of their holes on to the ground, for which reason the ducks go very early in the morning afield to seek for them, and eat them very greedily, **ganska snålt**. When it advances a little farther into the day, so that the sun mounts higher up in the heavens, the worms creep down into their holes under the earth, when the ducks also, as they can no longer reach them, return back from the plain, and wander home to the farms. We got afterwards several times to see that the carl spoke truth.

At *Woodford* Mr. Warner had four *Sea Gulls*, **Fisk-måsar**, who went in his garden, and diligently followed the gardeners, when they were digging in the garden. These gulls were very clever at swallowing the worms which were cast up in turning over the earth.

### **Jordens tjocklek på Kritan i dälderna.**

*The thickness of the soil over the chalk in the dales.*

The carl who accompanied us told us that when a well, **grop**, is dug in the dales between the chalk hills, one often may have to dig 14 or 20, and more feet deep before reaching the place where the chalk is met with, **tager emot**: but on the other hand, it is often not necessary to dig on the chalk hills or ridges, **kritbårgen eller högderna**, more than 1 or 2 feet, before the chalk rock itself occurs, **tager vid**. The soil was here everywhere in the dales, for a great part, the before-described [p. 256 orig.] flint-sand which nearly always had a reddish or rust colour.

*Genista Spinosa* [*Ulex Europaeus*]. *Furze* as fuel.

We saw in many places in the before-mentioned great arid common, **betesmarken**, considerable heaps of *Genista Spinosa*, furze, which had been here cut and afterwards laid together to be thence [T. I. p. 259] carried home for fuel. This fuel was a collection of furze, brackens, **Ormbunkar**, and dry loads of grass, amongst which, however, *Genista Spinosa*, furze, formed the greater part.

### **Buxbom planterad på torra backar.**

*Box bushes planted on dry hills.*

On one of the high chalk hills that exist here the Duke of Bridgewater had caused to be planted, partly in rows as hedges, partly in the form of small woods, a quantity of box-tree, *Buxus arborescens*, C[aspar] B[aauihin] The height of these trees was 4, 5, or 6 feet. They throve here very well. The place on which they grew was one of the highest-lying and driest of all that can be imagined, where grass and other plants from the dryness, and perhaps from the sterility of the soil, had entirely perished and died out, for these lay just facing the greatest heat of the sun **starkaste Solbaddet**, a little below the highest ridge on the south side of a high hill.\* In appearance, dryness and sterility, the hill sufficiently resembled Polaks-backarna near *Upsala*; but the soil was here quite another kind, viz., the yellow chalk soil, besides that this hill was getting on for two or three times higher than the Polaks-backe. The Duke of Bridgewater sold much of this boxwood in London to turners.

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\* Buxbom. These bushes still exist, 1886; the highest about 15 feet. The height of the ground is 760 feet on the east side of *Steps hill*, just below the highest ridge, which here runs N. and S. where I saw them. Sep. 22nd. [J. L.]

## Âkrarnas belägenhet, Jordmon, &c., omkring, Ivinghoe.

*The situation of the arable fields, soil, &c., around Ivinghoe.*

On the south side of the hills, about an English mile before one arrives at Ivinghoe, there lie some frightfully high chalk hills, which on almost all sides are steep, **branta**, but most of all on that which faces the N.W. [Steps Hill.]

At the foot of these chalk hills, to the N.W., N., and N.E. [Ward's Coombe] sides lie very large arable fields, which for the most part are quite smooth, **jämna**, and to the view sufficiently resemble the arable plain of Upland. The arable [T. I. p. 260] hereabouts, on which wheat was sown were laid out partly in *broadlands*, or mostly flat-ploughed plots, partly in *two-bout-lands*, or in small *riggs*, **ryggar**, with water furrows between: still *broadland* was most used. The *broadlands* were also, for the most part, quite flat, or just the least thing higher in the middle, **så godt som föga ting högre midt på**. Here appear no ditches, no acre-reins, not even fences, **gårdesgård**, or hedges around the arable fields, **âkrarna**. They lay in *Common-Field*, or in **teg-skiften**, though there was no *rein* between the '*lands*,'\* **tegarna**, but they were separated only by a narrow water-furrow, **vattu-får**. The colour and the soil, **Färigen och Jordmon**, here were now quite another sort, and different from what we had seen before, for the colour of the arable was here mostly white, or very light grey, which caused anyone who saw these ploughed fields from a distance before he had taken a good view of them to think they had been spread over with chalk. The soil here also was quite another sort, for it consisted of a

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\* '*Lands*.' So-called, 1886. Ivinghoe, Ward's Hurst, &c. [J. L.]

harder kind of chalk which is here called *Hurlock*,\* and has ordinarily the quality that it will with difficulty fall to pieces for use on the fields. Sometimes, when there is a great drought, it is said to fissure, **rämna**, very much. Otherwise they call this soil *loam*, or *loamy ground*, and it is just, as I may say, a medium between chalk and a stiff clay. It is a species of chalk, **kritaktigart**, in a certain way; but the chalk is so hard that it cannot easily be loosened or turned to any use on the fields. I speak of the soil which is dug up in the chalk-banks, or slopes, **Kritbackarna**, for that which is found in the ploughed fields was, through the folks industry and manuring, more loose, yet it seems almost to have the qualities of a potclay, **spiklera**, namely, to hold moisture. On the north side of the great hills [that is the range of Ivinghoe Beacon, Steps Hill, and Clipper Down] the ploughed fields were still, at midday, quite [T. I. p. 261] wet, which came from the sharp frost there was the night before, whose remaining moisture the sun had not yet been able to dry up. But when we went home in the evening the mould on the ploughed fields was quite dry. On the wet roads where the soil was much trodden it everywhere looked like a lime-mortar which is used for walling. The wheels of the carts with which they drove on the roads were so coloured by it as if they had driven them into a heap of mortar. It was a special feature that there were no flints on the ploughed fields, unless it were some single bit, of which it is quite uncertain how it had come there; while, on the other hand, the fields around Little Gaddesden and in all *Chilturn Land* were quite full of them; but, instead of these, there here lie pieces of this hard chalk. In the same way, in all the

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\* *Hurlock*, the name for the Lower Chalk, near Tring and Dunstable, 1886. [J. L.]

banks, **backarna**, where they had taken chalk the whole quarry, **brott**, seems to consist of such hard chalk lumps, **kritstycken**, but not a single *flint-bit* among them, except at one single place. Wheat is said to grow very well in this earth, barley tolerably, black oats somewhat better. In wetter places beans thrive very well, but pease are said not to flourish.

### Får i fällor på nyss sådda Korn-åkra.

*Sheep in folds on newly-sown Barley-fields.*

They were now busily engaged here in sowing *Barley*, **Korn**, which was done in *broadland*, and the seed was harrowed down directly after the sowing. The plough which was here everywhere used was only and exclusively the so-called *Foot-plough*.\* Many may think, because the *two-wheel single Hertfordshire plough* † has such great advantages over other ploughs, that they also would use it, because it is generally and almost exclusively used in Hertfordshire, which lies [T. I. p. 262] only 3 or 4 miles from here. But they said that their *foot-plough* is better, because the before-named Hertfordshire plough with its wheel could not advance in this soil, which at certain times of year is very soft and miry, **blöt och sank**, but the wheel would sink deep into it, and become stuck fast, **full-klibbade**. On these newly-sown barley-fields stood several folds in which they keep the sheep at night, which by their droppings manure the field con-

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\* *Foot-plough*. A few years ago these had almost disappeared, but within the last 7 or 8 years they have come into use again on the *Gault*, as at Slapton, where they are used in wet weather. They are now made by the blacksmith at Eaton Bray, 1886. The iron plough is used in dry weather, 1886. [J. L.]

† The Hertfordshire plough has apparently disappeared. I have not succeeded in seeing one, though I have been sent on more than one wild goose chase to remote farms to see one, 1886. [J. L.]

siderably where the barley is sown. When the sheep have stood one night on a place, the fold is changed next morning to the space immediately adjoining, and thus it is continued over the whole barley-field for a whole fortnight after it has been sown, until it is an inch or more high. They have always a bundle of good hay, which is strown out in the rack,\* **i häcken**, for the sheep, when they come there in the evening. The folds, **fällorna**, consisted here as everywhere of such *hurdles*, **grindar**; which are made exactly the same shape as our common **åker-grindar** in Sweden, although all the timber, **verket**, in those which were used for folds, was much smaller, **klenare**, so that they might be so much lighter to change and carry from one place to another. The breadth or length, as I will call it, of these hurdles was for the most part 8 feet†, the height 3 feet 6 inches. They had as many such hurdles in readiness, as their number of sheep was. When they are set up into a fold, one hurdle is fastened to another in this way that a stake, **stör**, is knocked down with a mallet, **klubba**, between the side posts, **sid-träden**, of two hurdles, to which pole, **påle**, one end of the hurdle is bound fast, and the fold thus consists of a lot of hurdles set in a four-sided figure, and a pole driven down between each hurdle, to which they are bound fast, so that they may stand firm. In these folds the sheep stand at [T. I. p. 263] nights under the open sky, and seem not to have it particularly warm on the wide plain, when a strong north wind blows; because the fields here are very large and lie open to that wind. But as the sheep are clipped here only once a year, and that in the middle of the summer, they can well make shift, **bärga sig**.

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\* I saw one of these, Sep. 21, 1886. [J. L.]

† Some I measured, Ivinghoe, Sep. 21, 1886, were 7 feet 8 inches long. [J. L.]

## Klädes-klutar til gödsel på åkern.

*Rags as manure on arable fields.*

On the fields which were sown with wheat, we saw here and there rags, **klutar**, or small *laps*, **lappar**, of old clothes, which were ploughed down in the field. Those who dwell here about *Ivinghoe*, and are 34 miles from *London*, do not fail to take the trouble to buy from tailors and others in London, all sorts of old rags which they carry from thence home, cut them into small bits, strow them over the field which they wish to sow with wheat, plough them down, and sow wheat therein. They said they scarcely knew of anything, which so manures the fields, and forwards the growth of crops in such a soil as they have there; for these laps hold back the moisture a long time and are a good manure, with several advantages.

## Åkrar utan häckar eller stängsel.

*Arable fields without hedges or fences.*

All these large flat fields which were situated down in the valleys around *Ivinghoe*, lay quite open, without any fence or barrier, **hägnad eller stängsel**, either of hedges or deadwood fences of any kind, **häckar eller gårdsel**. I asked why they had not planted hedges around the field as a barrier, **til stängsel**, as in all the other places in the neighbourhood? Some answered that hedges will not grow quickly in this soil. Others said that the fields all lie here in **teg-skifte**, exchangeable slips, intermixed, **om hvart annat**, so that it is thus not commonly done; for if one will go forward another wishes to go back, and if one wishes to plant, the other [T. I. p. 264] does not, and thus it is left undone. Hence it comes that no one had liberty to do it without a special Act of Parliament. I was tolerably satisfied with the latter reason, but the former I had

difficulty in believing; for I saw old hedges in one place and another by the fields where the trees seemed to flourish as well as up in *Chilturn Land* about Little Gaddesden, &c., for the hawthorn, sloe, blackberry bushes, and other leaf trees formed here as beautiful and thick hedges as in Hertfordshire. I enquired further, how the cattle can then be restrained from springing into the arable fields and there doing harm? To this they answered that each farmer keeps a *cow-herd*, *fä-herde*, who accompanies the cattle and sheep, and drives them on to the places which it is allowed for them to bait upon, and keeps them from running into the ploughed fields or meadows to do harm there.

**Huru åtskillig slags halm, ormbunkar, etc,  
beredes til gödsel.**

*How different kinds of straw, Brackens, &c., are prepared  
as manure.*

At a place just outside *Ivinghoe* there lay by the roadside a large dunghill of dung, straw, &c., shovelled together to ferment. Its length was 48 feet, breadth 24, and height about 1 fathom. It consisted of the fodder which they had given to the cattle and spread out under them in the farm-yard, *i fä-gården*, namely, wheat, barley, beans, pease, and oat-straw, together with a multitude of brackens. They dispose of it, as has been mentioned above (p. 251, *orig.* p. 251 *above.*)

**Huru de göra sig nytta af orenligheten på vägar  
vid byar.**

*How they use the dirt on the roads near the villages.*

Everywhere I have travelled in this country I have remarked that straw and other litter has been strown on the parts of the roads in the villages which were wet and dirty. The object of this was [T. I. p. 265] partly to get

the roads through the villages into a fitter and dryer state to go upon, partly and principally to procure by that means an increase of manure for the fields, for this straw or litter is trampled down by folk, horses, and other animals, mixed with the droppings of the animals, and the mud or soil the roads consist of, &c.

When it has lain thus for some time it is shovelled together into larger or smaller heaps by the wayside, which mostly have the shape of a cube, or oblong. Their height is seldom under 3 feet, but indeed more, up to a fathom. Commonly a little mould is cast on the top that the sun may not dry it too much. Here it gets to lie thus the whole summer in the heaps to rot and ferment, **brinna tilhopa**, after which it is carried out on to the fields as a beautiful manure.

### **Sädes-stackar på stälpar.** *Ricks on posts.*

At Ivinghoe we saw a great collection of ricks at their farms, which all stood on posts, just 3 feet from the ground. The posts were mostly of *Freestone*,\* hewn square. On the top of each stone-pillar, **sten-stälpen**, was laid a 'flat stone,' or 'resting stone,' † **hälla**, of the same kind of stone, which reached far beyond the pillar on all sides, to prevent mice from slipping up into the stack. Some had the pillars either in the middle or towards the upper ends, clad with a thin very smooth brass or tin plate, **mässings eller bläck-skifva**, which likewise hindered the mice from climbing up into the stack, because they could not possibly get fast hold of the brass or tin. Yet it was equally necessary that no sticks, timber, or other things should come to rest against the stack, of which they could easily avail themselves to get

\* Totternhoe Stone.

† Called Flatstone or 'Resting Stone,' 1886. [J. L.]

up. These stacks were sometimes four-sided [T. I. p. 266], sometimes round, and their shapes can best be seen from the accompanying figures; for they did not have them in many varieties. On the top, these, as well as all ricks in these places, were very well thatched with straw, **ganska väl täckte med halm**, which was done in the same way as has been previously treated in detail in respect of hay-stacks [p. 211 *orig.*] In such stacks were built up not only wheat, barley, and oats, (for rye is not sown in this place), but also pease and beans. Besides, the feet or pillars, **pelare**, which stood round about the sides, there was always a foot or pillar set under the middle of the stack for the sake of greater strength. The number of the pillars was commonly nine—viz., one under the middle and eight round about. These ricks always stood at home at the farms, and never out on the fields. The crop, **säden**, can be kept for a long time good and uninjured in such a stack, without turning musty, or taking any harm; for manifold experience has shown that all kinds of seeds are kept [T. I. p. 267] best and longest in their own *seedhouse*, or husk. Down on the bottom, **botten**, 'Rick-staddle,' or 'Rick-frame,'\* is spread out preferably, furze, hawthorn, and sloe, and sometimes brackens. These thorny trees are especially used for the bottom of the rick, so that if any chance has brought mice into the stack, their thorns should deprive them of the pleasure of staying there long, and also hinder the ascent of others. Down at the ground the stacks were always narrower, and broadest in the middle, where their thatch ended, so that the sides might not take harm from rain which drips down from the thatchfoot on to the stack. The pease and bean stalks were thatched with straw in the same way as the corn-ricks.

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\* So called, 1886. [J. L.]

**Vält.** *The Roller.*

On a pasture at Ivinghoe lay a large roller, which was made in this way, that above the roller was as it were a roof, on which stones could be laid when one wished to make the roller heavier, and taken off again when one wished to roll anything which did not require such a great weight. The diameter of the roller or the stock was 18 inches.

**Bladen på Hedera, &c.** *Ivy leaves as food for Sheep.*

The leaves of *Hedera Arborea*, C.B. are said to be gathered here by good economists, **hushållare**, who give them green to their sheep, which eat them very greedily. The carl who accompanied us related as a fact, that small pills, **ärter**, are made from this tree, which pills are laid in sores to keep them open.

**Beskrifning på Ivinghoe.** *Description of Ivinghoe.*

*Ivinghoe* is a parish or large village, whose inhabitants, for the most part, live by agriculture. Yet there were here also a few shopkeepers, as is usual in all parishes or large villages in England. The houses [T. I. p. 268] or farms are not built all in a row, as in Little Gaddesden, but more in a round form, as in a town. In the middle of the parish there stands a beautiful stone church,\* with a tower to it, **med torn på**, yet not built in the manner usual in England, viz., cut off at the top, but with a spire, **spir-torn**, in which was set a timepiece without a hand.†

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\* Principally flint with irregular lumps of *Freestone* (Totternoe Stone).  
[J. L.]

† There are now two clocks, both with two hands. Such a one-handed clock may still [1886] be seen on one of the west towers of Westminster Abbey. [J. L.]

All houses in this parish, besides some outhouses, which were of oak-boards, were built of stone or brick, **tegel**, yet the brickwork was entirely between cross-work or cross-timbers, **korsverke**, which went both *ad angulos rectos et acutos*.\* The roofs nearly all of straw, **halm**, well-thatched, and very steep. Everywhere by the streets and round about the houses there were trees planted, so that the place lay almost in a garden. The village lies mostly in a hollow. On the east side are high chalk hills, on which arable fields go right up to the highest point.†

### **Såg-spån af Bök til bränsle.**

*Saw-dust from Beech for fuel.*

In some places we saw that they had in their sheds, **lider**, among other fuel, also heaps of beech-dust, **Bök-spån**. Their use, when they are dry, was said only to be this—that by them the fire can be kept alive on the hearth, but that they are no good to cook food with. Some sticks were always laid at the bottom on the hearth, **nederst i Spisen**, upon which these were afterwards cast.

### **Flinta til gålf och grundval på hus.**

*Flints for floors and foundations of houses.*

In some places the floor of the entrance, **Förstugugålfven**, consisted only of flints, which were there laid in clay, **ler**, so the flat side came to be turned up. In many places, also, the foundations of the houses, often for a height of 4 feet above the ground, were built only of flints.

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\* Many of these old houses are still to be seen at Ivinghoe. At Eaton Bray, called 'brick and stud' work, 1886. [J. L.]

† On a conical eminence seen from Ivinghoe village on the northern end of Pitstone Hill, over 600 feet. It is one mile S.E. of Ivinghoe. [J. L.]

## Allehanda slags halm til gödsel.

*All kinds of straw for manure.*

In each and every farmyard there was wheat, barley, oats, beans [T. I. p. 269], pease, and other straw in abundance strown under cows, by that means to increase the manure in the manner which has been described above [p. 251 *orig.* 251 above].

## Âkrarnas belägenhet, etc.

*The situation of the ploughed fields, &c.*

North of Ivinghoe, those fields which lay nearest the village were situated on the north side of a chalk hill,\* so that they slope considerably. On them appeared neither *reins* nor ditches, but only poor broken hedges around them. All were laid out in *broadlands*. The breadth of each broadland was commonly 20 feet. The soil was white and of the same character as has been described [p. 259 *orig.*], viz., of a very hard chalk without any mixture of flint among it. It is said to have the property that in severe drought it cracks all to pieces in deep and wide fissures, **vid stark torka spricker alt sönder i djupa och breda rämnor**, often 2 or 3 inches broad. But the lower parts of the fields north of Ivinghoe, those, namely, which lay at the bottom lowest down on the flat plain in the valley were laid out in an entirely different manner, namely, in *ridge half-acre land*, and *ridge acre land*, that is, the whole field, **âkern**,† lay in great ridges, **ryggar eller uphöghingar**, highest in the middle, **hälst midt på**, and sloping on both sides, just in the

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\* The escarpment of the Lower Chalk or Hurlock. [J. L.]

† There is one particular field from which Kalm evidently took his description—the third from Ivinghoe, through which the footpath to Ivinghoe Aston passes, before it crosses the beck. [J. L.]

same way as the fields are laid out in Westmanland and Nerike in Sweden. Each 'rigg' was here so large that it contained a *whole* or a *half tunnelands land*, 'Townland's land.' The breadth of each ridge or **rygg** was 20, 24, 28, 32, or more feet.\* The perpendicular height of these ridges in the middle above the plane of the bottom of the water-furrows, **midt på, mot det de voro i botten af vattu-fären**, was 18 inches, 2 feet, or 2 feet 6 inches; for some ridges were higher than the others. They were obliged to lay out their fields in this way, because they lie so low and are very favourably placed for wet, **och äro mycket benägne för väta**, and because there are not here used any [T. I. p. 270] other ditches than water-furrows, **vattu-färrar**, between these broad ridges. Thence also it comes that the land which stands nearest the water-furrow has been entirely drowned and ruined by the water. These low places were last year sown with beans.† All the ryggs and water-furrows were drawn from the highest part of the fields down to the hollows so that the water might run off so much faster. Down at the bottom of the valley, there flowed a little beck, scarcely larger than an ordinary ditch.‡ Flints seldom appeared on these fields, much less any other kind of stone. The fields this summer lay fallow,

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\* *The breadth of each ridge.* On Sept. 21, 1886, I measured five of these. They are very high, and there is a furrow along the summit of each—not for water, but for the reason that the plough started at the bottom on both sides and finished at the top of each ridge last time it was ploughed—which must have been very many years ago. The field is now old pasture. The following are the breadths in feet :—

Furrow to Ridge, and Ridge to Furrow : 25, 24, 23, 19, 25, 21, 23, 25,  
17, 26.

Furrow to Furrow : 49, 42, 46, 48, 43.

This kind of ploughing is still called "Ridges." [J. L.]

† Grassland, 1886. [J. L.]

‡ That running from Ivinghoe N.E. to Ivinghoe Aston. [J. L.]

and will in autumn be sown with wheat, but still they had not begun to plough them up, but they were in the same state as when the beans were cut.

### Âkrar och annan jordmon, etc.

*Arable fields, and another soil, etc.*

We afterwards crossed over the afore-named beck on the other side of which arable fields occurred which were of an entirely different colour from those we have just described, although they were only separated from the others by a little beck; for the soil here was white no more, but of a *dark grey* colour\*, **af en mörkaktig färg**, and had flint stones enough. It seems also not to be so stiff as the white earth, but more loose, and resembled **mylla** mould. On account of their low situation, it was similarly laid out in broad *ridge lands* or *ryggs*, still the *ryggs* here were not quite so high as the former ones, or those on the other side of the beck, which were exactly like the ploughed fields of *Westmanland*; but these were more like our fields in *Nerike*, where the ridges are not so high. It was wonderful that a little beck of 2 or 3 feet wide should make so great a difference, especially as the same beck was not over 2 feet deeper than [T. I. p. 271] the water furrows themselves in the fields on both sides. The reason might be this. The beck runs from west to east. On the south side lie high chalk hills of the hard kind of chalk, which slope gradually towards the beck. On the north side of the same beck there lie for 2 or 3 miles small hills of another, or a little darker earth,† which also slope towards the beck, but their slope is so slight,

\* The Gault. [J. L.]

† The Gault. [J. L.]

that it scarcely departs from a horizontal plane, **streket**. The white earth, **jorden**, which occurs in the valleys on the south side of the beck, has doubtless been washed down from the neighbouring chalk hills, because the soil, **jordmon**, is identical; but that it has not gone on to the other side of the beck, may probably have been caused in this way, that the water in the beck, which runs tolerably swiftly, always carries the same away with it.\*

I also imagine that in the first instance the earth on the south side of the brook has been down in the valleys of the same black, **svarta**, colour as it is immediately on the other and north side; but has afterwards been covered, **öfver hölgd**, by the white earth which has been washed down from the chalk hill: for the black soil on the north side of the beck seems to have to thank the beck for it, that it has got to retain its colour. Here on the north side of the beck, the land was again divided into small inclosures or **täppor**, of arable fields, meadows or pastures, surrounded with living hedges, though here also we were met by large arable or Common Fields† which there lay in **teg-skifte**, *exchangeable slips*, or 'lands,' and were ridged like the ploughed fields in *Nerike*. When we came two miles north of *Ivinghoe*, the fields acquired a still blacker colour, so that the soil there was almost like a **svart-mylla**, 'black-earth.' They were all laid out in 20-foot broad ridges, tolerably high, exactly like the arable in Westmanland, only that a great part of these *ridge-* [T. I. p. 272] *lands* were so, that along

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\* The true reason is that the base of the chalk is reached near the brook, which here flows from S.W. to N.E., and that the Gault passes under the chalk, dipping S.E. [J. L.]

† Alas, by a mistaken political economy, these and other open fields have been enclosed. [J. L.]

the middle of the highest ridge was drawn a little water-furrow 6 or 9 inches deep. The water-furrows between the ridges were now nearly full of water. A great part of these ploughed fields had been last year sown with beans, and were now left this summer fallow. Most part of the fields lay low, and in watery places. Some of them were now sown with beans, and that in *broad cast*, and afterwards ploughed down. This land where the beans had just been sown had the summer before been sown with wheat. That this land was low-lying and wet could also be seen from several plants of *Juncus Aquatilis*, *rushes*, which grew on the very ploughed fields themselves.

### Dikes-jord til gödsel på äng.

*Ditch-earth for manure on the meadows.*

There was at a place close to the road a ditch,\* through which a great deal of water had its escape, **lopp**, which came from the arable fields just described, which there consisted of a black earth, **svart jord**. This ditch, which had been filled up again by the black earth which the water had carried with it from the arable fields, had just been cleaned out. All the mould, **mullen**, which had been taken out of it was arranged in a high long bank on the ground alongside of the ditch, where it would now be left to lie for a time in the open air, to be, as it were, tempered. After that it would be carried home to the farm, cast on the dunghill, where it would lie for a time, to draw to itself more juice from the dung, and, after that, would be carried out on to the arable or meadows, and spread out over the grass-sward, where it will incredibly increase the grass growth, especially if rain conveniently happens to fall directly after it has been outspread.

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\* *Vidi*, Sep. 21, 1886, Ivinghoe Aston. [J. L.]

[T. I. p. 273.]

**Åkrarnas belägenhet, etc., vid Carrington.***Situation of the ploughed fields, etc., near Carrington.*

At Carrington,\* which lay a couple of miles north of Ivinghoe, the arable fields consisted of an earth which was almost as black as gunpowder, very fine and loose, and looked nearly like the black earth, **den svarta jorden**, which we dig out of our **kärr**, bogs, in Sweden. There seldom appeared any flint-stone in it. The whole field was laid out in broad *ridge-lands* or **ryggar**, in the same way as in Nerike. A part of them was now sown with wheat, which now stood green and very beautiful. Along the middle of the highest ridge there went a little water-furrow,† 6 inches deep, or sometimes a little more. The breadth of each and every *ridge-land*, or **rygg**, was nearly always 20 feet. The wheat had always been sown in the ordinary manner, and ploughed down.

**Halm til bränsle.** *Straw as fuel.*

We saw on a ploughed field large heaps of wheat-straw, **hvete-halm**, and also in one place and another by the farms this straw arranged in heaps, partly under shelter, **skul**, partly not. They told us that they would use the aforementioned straw in this woodless district as fuel for boiling water, washing dishes, &c.

**Korn såddes.** *Barley was being sown.*

Everywhere we wandered about to-day they were engaged in sowing barley, both on flat-ploughed plots and on broad *ridges*. When the barley is sown they

\* I have failed to identify this place, unless it be Cheddington. [J. L.]

† "Water-furrow." I am told these are not water-furrows, but simply the result of the last ploughing having been started at the bottom on each side of the ridge and turning downwards, so that the last bout on each side leaves a furrow at the top. [J. L.]

harrow it under. There were commonly three or four harrows bound together abreast in the manner before described [p. 193 *orig.*], and a horse for every harrow, so that they all drew abreast. One single little boy drove all three horses and harrows, so that for three or more harrows bound together, and the same number of horses, there was only required a little boy.

[T. I. p. 274.] **Stora åker-stycken sådda med Bönor.** *Large ploughed plots sown with beans.*

The arable fields which lay immediately north of *Ivinghoe*, which were very low-lying and wet, were almost entirely sown with such kinds of beans as they here call *horse-beans*.\* It is with them that horses and swine are fed the greater part of the year, but to sheep and cows they are not commonly given.

### **Tjenlig mark til Får-bete.**

*Land suitable for sheep-pasture.*

One and all whom I asked about it truly told me that the fields and arable, **fälten och åkrarna**, here about *Ivinghoe* are not good for sheep-pasture, because they are wet and low-lying, for when rainy summers happen the sheep here commonly get the rot, **Röt-sjukan**, and dropsy, and often die off in large numbers. On the contrary, they consider all *Chilturn land*, that is the districts lying on the hills, or the chalk-formation, as the most suitable of all and most wholesome for sheep, and there they thrive the best of all, all of which a long experience has shown to be true.

**Kalk af ordinair flinta.** *Lime from ordinary flint.*

Several people in *Ivinghoe* related that those who dwell 20 miles from thence† burn their lime from the

\* They are still called so, 1886. [J. L.]

† The folk say that this was probably near Leighton Buzzard. [J. L.]

ordinary flint, which in Hertfordshire occurs everywhere on the fields. I made the suggestion that it might be some kind of limestone that resembled flint. They answered 'No,' but that it was the same ordinary flint as occurs here on the fields, and that which is used to strike fire with, but the manner in which it is burned to lime they were unable to describe. The smith at *Little Gaddesden* and another old man also confirmed the same—viz., that in some places they burn lime from flint, and added that [T. I. p. 275] this lime is very good and strong, and better than other lime; also that it is a special way how they burn flints to lime, which these men, however, had not themselves understood. Mr. Ellis also told me that he heard told as a fact that lime is in some places burnt from flint, but that he himself had never seen it done. The truth, however, seems to result in this, that it is some particular kind of limestone which in colour, shape and hardness tolerably resembles flint, and it is of this the lime is burnt, but strangers mistake it for flint; for it is somewhat difficult to believe that '*ordinair Flinta skal så lätt gå til kalk,*' ordinary flint will so easily change to lime!

#### *Petrifications* in Chalk.

At Ivinghoe, also, several related that everywhere here lime is burnt from ordinary chalk, but as I made the suggestion that it might be some kind of limestone which resembled chalk, the landlord, **Husbonden**, went into the house, **i gården**, and produced, **tog fram**, a piece of ordinary chalk and showed that it was of this that lime is here burnt. When we began to examine the piece of chalk we found several *mussel-shells* imbedded in it. We broke the piece of chalk asunder, when shells like mussel-shells, **likaledes mussel-skalen**, were found inside it, which were all of the kind which are called

*Pectinites*. They were all very small. This was an unfailing sign that the chalk-formation, **Krit-bärgen**, had in former times been sea, as well as that the chalk is a child of later times, unless these so-called mussel-shells are *lusus naturæ*.

### Nyttan af den hårda kritjorden vid Ivinghoe.

#### *Use of the hard chalk at Ivinghoe.*

The white earth, **jorden**, which was dug up in wet places at or near Ivinghoe below the chalk of the hard kind or *Hurlok*, looked just like [T. I. p. 276] a lime mortar.

The carl who accompanied us, told us that they here use to build walls with it because it is very binding. The pieces which had become very hard, and as it were half petrified, were carried out on to the roads, to repair them with. Otherwise, ordinary flint was also very much used for carrying on to the roads to fill up the deep ruts, **spåren**, with, which the wheels of the large and heavy carts and wagons which are used in England had made, often getting on for 2 feet deep in the ground.

#### **Häckar af bök.** *Hedges of beech.\**

In one place and another between *Ivinghoe* and *Little Gaddesden*, the hedges around the inclosures consist principally of small beeches, which had been industriously planted there. And as the beech in this district retains its old leaves the whole winter right up to the spring when the new begin to shoot forth, such a beech-hedge is of especial use and advantage, as it is a very good shelter for sheep in the winter time in bad weather and cold blasts, while on the other hand the other hedges stand leafless.

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\* As on north side of Edgeborough churchyard, 1886. [J. L.]

### Ändring på jordmon. *Change of soil.*

As soon as we had gone  $1\frac{1}{2}$  miles south\* of *Ivinghoe* the soil acquired quite another colour and appearance. The white disappeared, **tog af**, and the yellowish-red of which all the fields round about *Little Gaddesden* consist, again appeared. The fields were full of flints, the hills clad with an abundance of leaf-trees, and luxuriant hedges around all the fields. What the reason was of such a change we could not discover, for the *facies* and appearance of the chalk hills near *Ivinghoe*, and here where this change of soil began, was the same as around [T. I. p. 277] *Little Gaddesden*, only that the dales between were here many times larger and planer.

• May not the dales in former times have stood under water, while the hills on the other hand, which were above it, were cultivated and inhabited, and the soil, **svartmyllan eller myllan**, resulting from decayed plants and animals have had many times many centuries to increase, and by mixing with the chalk, to have acquired the yellowish-red colour? But then it seems that rain and water-floods wash down the mould or soil, from the hills down into the dales? May not the white earth around *Ivinghoe*, perhaps after some centuries, acquire the same reddish-yellow colour as the soil around *Little Gaddesden* and thereabouts. May not the difference in the ripeness or hardness of the chalk be due to that difference of the time and the ages since the chalk formation has come to stand above water or under the same?

### Fläckar af särskild jordmon.

*Patches of different soils.*

In some parts of the commons, **utmärken**, which

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\*  $1\frac{1}{2}$  miles S. of *Ivinghoe*. Kalm here seems to have ascended *Albany Nower*. The only "dales" are *Albury Dale* and the far larger and planer pass of the *Bulbourne*. [J. L.]

consisted of the reddish-yellow earth, there occurred *plats*, **plätter**, of a totally different colour, viz: almost as black as pitch. Such a spot might be about 6 feet diameter. The carl who accompanied us, told us that they call these spots *land springs*, that they are sometimes very wet and boggy, **sura**; if they dig quite deep down in such a place, no other colour is met with than this black, which is, as it were, a *pipe* or *vein* of quite differently coloured earth among the other. May not a long continued pollution, **syrande**, of the water have produced this colour? May it not be that there is under the chalk formation a black earth, and that a water-vein or pipe ascends from it up to the day,\* or may some mineral cause this?

[T. I. p. 278.] **Skillnad på hvete-broddens grönska och längd.**

*Difference in the greenness and length of wheat stalks.*

It is well known that here in England they do not sow all their wheat at one time, but some earlier, some later. Some in September, other in October, November, December, January, February, &c. Therefore the sprouts must also be different from one another. We saw to-day some of all sorts. Some was quite green, long, thick, and very beautiful, others less and less, according to the time it had been sown, so that some was only just coming up.

**Skada af Teg-skifte.** *Evils of the common fields.*

To-day we had manifold proofs of this, what harm and hindrance it is for a farmer to have all his property in **teg-skifte**, *common fields*, with his neighbours, and on the other hand what an advantage to have an *isolated*

farm and possessions all to himself, when he gets to manage and cultivate them according to his own discretion. Around *Little Gaddesden* and on all *Chilturn-land* every farmer more or less had his own severalties which he afterwards divided into small inclosures by hedges. There was one inclosure sown with wheat, another with barley, turnips, pease, oats, *sainfoin*, clover, trifolium, tares, potatoes, or whatever he wished.

While the fields were lying fallow, he could sow it with turnips, feed sheep on it, and afterwards plough down the remaining bitten turnips, and have thereby a much greater advantage than if he had left it fallow. In short, he could in a thousand ways improve his property and earn money. On the other hand, here about Ivinghoe, where the common fields are everywhere in use, no hedges are seen. Nor are there here any pease or kinds of grass sown as fodder for sheep, cows, horses and [T. I. p. 279] swine. When wheat, barley, some oats, beans, and turnips at anyone's farm are excepted, they had nothing more.

Nor had they any turnip land to feed sheep upon. Therefore they were deprived of the advantage of getting to sell any fat sheep or other cattle, &c. The reason they gave for all this was that their arable was *common field*, **allmänninge**, which lay in **teg-skifte**, and thus came to lie every other year fallow, when one commoner always had to accommodate his crops to the others; but the principal reason of all was said to be that on a *common land* no one has freedom to inclose his strips, without a special *permission* and *Act of Parliament*.

*The 6th April, 1748.*

In the morning we set out again, with the same man who accompanied us the day before, on a walk to a place where they dig the white, hard, chalky stone of which

churches, houses, &c., in this district are built. This kind of stone is here called *Freestone*, and shall be described immediately below!

### Âkrarnas belägenhet, &c.

The fields between *Little Gaddesden* and *Dagnal* lay for the most part on long sloping sides of the chalk hill. A great part of them were laid out in *broad-lands*, especially those on which barley was now sown. These *broad-lands*, **breda åker-stycken**, lay almost entirely flat, so that they were not higher in the middle. Between each *broad-land* there always went a water-furrow drawn from the highest part of the field down to the dale. Down at the bottom, where the water-furrows and *broad-lands* ended, was a water-furrow drawn across the others, but commonly this defect was remarked, that this [T. I. p. 280] furrow had laid an earth-bank at the end of every water-furrow running down to it, without the owner having taken the trouble to shovel up the mould out of the water-furrows running down the field so as to leave the water free escape into the cross-furrow. Mr. Ellis's fields were in this respect nothing better than the others. It seems also difficult to avoid the result that the water, if a wet summer should happen, would here come to be dammed up and injure the plants.

### Halm-tak. *Straw thatch.*

On most of the houses, where we went to-day, in *Dagnal* as elsewhere, the roofs were mostly of thatch, **voro taken merendels af halm**, built in the usual manner, previously described, very steep, and 1 foot in thickness. Sometimes also the highest part of the gable-wall, getting on for half of the gable from the top, **upifrån**, was clad with straw, or made like a thatch

roof, so that some of these roofs somewhat resembled the so-called *Italian* roofs. The carl who accompanied us said that these roofs are subject to great risk of fire and sparks, whence it happens that they are now beginning to provide themselves with tile roofs, **tegel-tak**, as fast as they can afford to. The roof-tile, **taktegel**, which they use here for their roofs is almost always of the square kind,\* and flat like shingles, **tak-spån**. They are made and burnt from the yellow earth, which is found everywhere about here. In many places they had at least tiles on the cottage, or the part of the cottage, in which the fire was, still there were a great many cottages thatched with straw thatch.

### **Tre-hjulad vagn, at köra säd, &c., med.**

*Three-wheeled wagon to carry seed, &c., with.*

At *Dagnal* we saw a little *vagn* with three wheels to carry seed, harrows, ploughs, etc. in, on to the fields, and for other purposes. The diameter of the wheels, which were all the same size, was 2 feet. Above the cart, **kärran**, was an awning, **skrinda**, of 6 good [T. I. p. 281] feet long and 3 feet broad. The wheels were set so that one stood in front and two behind, side by side, as in a cart, **kärria**. The front wheel was fastened to and ran in the shafts, exactly like the wheel on a wheel-barrow, where it would nevertheless have been better if it had been so arranged that in turning it could have been able to turn itself about in the same way as the front wheels under a wagon.†

### **Rariteten af källor, bäckor, och åar här på orten.**

*The rarity of springs, becks, and rivers in this district.*

It was remarkable that in the whole of this district

\* And still is, 1886. I have seen no pantiles in this district. [J. L.]

† Similar wagons are now used by railway contractors. [J. L.]

it was a very rare thing to get to see a spring. The parishes or the villages lay partly on the chalk hills, partly in the dales in the same, yet commonly without having access to any spring. This was so at *Little Gaddesen*, and at other villages. All the water they had was taken out of wells or ponds, **brunnar eller dammar**. Thus there were at nearly every village, one or more large ponds expressly dug to be collecting places for the water. Here the people took their water, and here the cattle slaked their thirst. In some places in the pastures there were also similar ponds for the sake of the cattle. The country is here little else than a collection of chalk hills, as it were, set beside each other, long-sloping nearly on all sides. Between these chalk-hills are deep dales. When the land in other parts of the world goes in such undulations up and down, or consists of a chain of hills and dales, there nearly always runs a small if not a larger beck down in the dales between the hills. So have I seen it in Russia, so it is in Sweden, so have I since found it in America, but not so here. The bottoms of the dales consist either of arable fields, meadows, pastures [T. I. p. 282] or *commons*, **utmärker**, without any running water being seen. It is very seldom that any beck is met with here. The conclusion, therefore, seems to be that a land which consists of chalk-hills has indeed its springs, becks, and rivers; but still not nearly in the same abundance as a land which consists of granite and clay soil, **gråbärg och lergrund**. After we had to-day walked over very large arable fields, which lay smooth and even, and closely resembled the fields in Upland in Sweden, only that on these English ones no acre-reins are found, but the plots lay all in flat *broad land*, we met with a spring,\* **råkade vi på en**

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\* This was Buckshead or Boxstead Spring. [J. L.]

**källa**, as a great rarity in these districts. It took its rise in the middle of a large arable field, where it, with its beck, formed a valley 60 or 70 feet below the surface of the fields. In this deep dale the water streamed from under the earth in several places just as if small becks had come rushing out, and formed at once a tolerably large beck. The banks of the spring-beck, **Käll-bäcks-backarna**, consisted entirely of chalk, although they were now mostly overgrown with grass.

*Watercress*. Down in the beck grew an abundance of *Nasturtium aquaticum supinum*,\* C.B. A common complaint was that high-lying districts had great want of water.

### **Allehanda slags Halm til gödsel.**

*All kinds of straw for manure.*

At all the farms which we passed by to-day, we saw all kinds of straw laid out in the farm-yards, to be changed into manure in the way which has been described in detail above [p. 251, *orig.*].

### **Sädes-stackar på pålar eller stälpar.**

*Ricks on poles or pillars.*

At Edgeborough, † Eaton, ‡ and all the villages and farms we passed by to-day we saw a number of ricks of wheat, barley, oats, pease [T. I. p. 283], and beans, which there stood on pillars, **stälpar**, hewn out of the white so-called *Freestone*. The height of the pillars was 2 feet 6 inches to 3 feet. Their shape, and the build of the stack in other respects the same exactly as has been described above [p. 265, *orig.* 267 above]. But, besides these kinds of

\* *Nasturtium Officinale*. *Watercress* is still largely cultivated at all the chalk springs, of which there are six within a mile, and eight within the two miles between Coombe Hole and Well Head inclusive. [J. L.]

† Still so called (1886), though spelt *Eddlesborough*. [J. L.]

‡ Eaton Bray. [J. L.]

stacks or *ricks*, we also got to see at *Eaton* and *Edgeborough*, and at other farms, another build of ricks, which was as follows:—The rick, or the crop itself, was set on a staddle, **botten**, of twigs, which staddle stood on six posts of wood. The height of each post was 8 feet. In the middle of the same, or 4 feet from the ground, was a tin-plate of 6 inches broad, bent round the post to hinder the ascent of mice to the rick. At the upper ends the posts were cut in tenons, fitted into mortises in the horizontal beams which lay on them, and formed the bottom of the stack, or rick-staddle. Down at the ground these posts stood on logs, so that they might not be rotted away at the ends from the moistness of the ground. On the top the stack was very well thatched with straw. Commonly, these stacks were of the four-sided shape (as in Fig. p. 266 *orig.*). A dead rook was mostly hung thereupon to frighten others of the same kind. In these stacks there was the advantage that they could also be used as a *skeel* and shed, **skjul och lider**, to keep all different kinds of implements under for rain, for carts, ploughs, harrows, &c., were commonly placed under them; but then it was necessary to look carefully to it that none of these implements were so arranged that they could serve the mice as a ladder up to the stack. These and many kinds of ricks were used only by those who had large farms, or **gårdar**, may be of very many acres, for those who were small farmers or **Landtmän**, had no need of such, because they soon arrived at the stage of thrashing out their crops.

[T. I. p. 284.] **Säten, at sitta på vid spisar.**

*Settles, to sit on by the fire-places.*

At the taverns or inns, **krogarna**, it was the custom that the carls sat by and around the hearth and either smoked tobacco or drank. It has been said before, that

no **spjäll** is used here, and that the door of the room is seldom shut, especially in taverns and inns, so that the wind has free entrance nearly from all sides. On the hearth the fire always lies and burns. Therefore, when it is cold, one can often warm oneself on one side and freeze on the other. To prevent this, there was used here in many places a kind of settle or bench, **säten eller bänkar**, made of boards, in shape like a sofa with very high back, so that when one was sitting therein, the head could not be seen from behind. These settles, **såffor**, did not go in a straight line, but were *curved* like the arc of a circle, because those who sat in this settle thus had better advantage of the warmth of the fire, which came, as it were, from the centre.

According to their size, six or more persons could find room to sit in them. When one sat in such, in front of the fire, he was never exposed to a draught on his back, because the high frame of close boards prevented that.

#### **Vinter föda för Bi.** *Winter food for Bees.*

The carl who accompanied us told us that the best food which can be given to bees in winter time is salt, which is finely powdered and set for them. He said further that the bees in this district are commonly fed in the winter with sugar and honey, which, however, is not nearly so good as this, viz., salt, however absurd it may seem to one who has never tried it. He assures me that out of 100 who keep bees there are not ten who know this [T. I. p. 285], not Mr. Ellis himself. The carl himself, however, had many times tried feeding bees with it. He believed that I should one day have occasion to thank him for it.

#### **Fåren bette på Hvete-brodd.**

*Sheep pastured on Wheat-sprouts.*

The wheat fields now stood here in many places

beautiful and green with luxuriant shoots, on to which flocks of sheep, **Fåre-hopar**, were always driven to pasture there. As this was a *Vale Land*, or land consisting of large open fields in the vale, so there were not here used many inclosures bounded by living hedges, but mostly *common fields*, or lands, which lay in **teg-skifte**, *lit. exchangeable slips*, or 'lands,' for which reason, also, we saw here no inclosures sown with turnips or grass seed as food for sheep.

**Korn såddes.** *Barley was being sown.*

The folk were this day occupied everywhere in the fields in sowing barley, which was done on smooth or flat ploughed land, when it was sown out in the same way as with us in Sweden, and was harrowed down.

### **Åkrarnas belägenhet.**

On the north side of Eaton [Bray] there were very large arable fields which lay\* between the chalk hills in the *vale*, **dalar**, in sufficiently low-lying and wet places. They much resembled the fields, **åkrarna**, in *Upland*, in this, that these were large, and lay quite flat and not on hills.

Since they lay so low and were so very wet, they were all laid out in *Ridge Acre lands*, or in the *Westmanland* manner. They differed only from them in this respect, that along the middle of the highest part of each ridge there went a little water-furrow 6 to 9 inches deep, and the same breadth on the top. In the water-furrows between the ridges there now stood a large quantity of water. No other ditches were seen. Wheat was sown on a part of these fields, and [T. I. p. 286] they were now very busy sowing barley on the other.

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\* On the Gault. [J. L.]

### **Snäckor uti ymnighet.** *Abundance of Snails.*

We went through an inclosure, **täppa**, where was a little wood of leaf-trees. In it there lay on the ground under the trees a very large number of snails.

### **Breda åker-reinar vid häckar och hvar-före.**

*Broad acre-reins by the hedges, and why.*

In nearly all small inclosures and tofts, **täppor**, of arable in this district at *Little Gaddesden*, as well as in other places, the 'reins,' **renarna**, by the hedges were commonly of considerable breadth—12 feet wide or more. I asked the reason of this. The answer was that, as in all these places there is very little meadow-land, **äng**, they carefully cultivated the reins to increase their supply of hay. Besides that, it is not convenient to have the ploughed fields too near to the hedges, for as the trees of which the hedges consist, run out into the soil of the ploughed portion, so no crop can grow near the hedge, because the roots of the trees then draw all the nourishment out of the soil, for which reason it is also found that the seed which is sown too near the hedge, as it were, dwindles away and dies out.

### **Beskrifning på Tatternels\* Stengrufva.**

*Description of the Totternhoe stone-mine* [called the "Quarry-pit," 1886.]

We went afterwards to the place where the white stone is hewn, which is here called *Freestone*, and of which churches and other houses, &c., are built. The place where it is taken out is one of the highest chalk hills in this district, situated in *Bedfordshire*, just 6 miles north of *Little Gaddesden*. The nearest village to it is called

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\* Tatternel. Still so called (1886), though spelt Totternhoe. [J. L.]

*Tatternel*, after which the mine or stone-pit, **grufvan eller Sten-brottet**, likewise got its [T. I. p. 287] name.

In some places these chalk hills were long-sloping, in other places steeper. In some places the ploughed fields were on the top of all, where the chalk seems white enough, yet not quite so white as chalk, doubtless because it has from time to time been mixed with all sorts of different manures which have been carried on to the fields. Here there were ploughed fields in many places on the top of these chalk hills, when just under the same, many fathoms into the hill there were large 'drifts' or 'adits,' **gänger**, where they hewed and dug up this stone.

When the hill was observed, on a side where it was steep and all the grass sward was off, so that the clear white chalk showed itself to the open day, it then lay mostly in this order :

Ft.

On the top was the grass sward, **gräs-skårpan**, with the soil, **svartmyllen**, immediately under it about 1 foot thick, or sometimes a little less ..... I 0

After that the ordinary chalk came on, which however was blended with the harder kind of chalk which is here called *Hurlok*, and is so hard that one cannot write with it. The deeper one gets the more he meets with this *Hurlok*, and less and less of ordinary loose chalk, till after 3 or 4 fathoms perpendicular depth there is nothing else than bare *Hurlok* ..... 24 0

Among the chalk and *Hurlok*, flints next to never appear, so that flint is here very rare. When one comes still farther down, this *Hurlok* begins to be mingled with *Freestone*, when the *Hurlok*, as one gets deeper, diminishes more and more, while the *Freestone* on the other hand

increases, **tager til**, until very low down one sees nothing else but bare *Freestone*.

[T. I. p. 288.] This freestone is dug deep under the hills. Here were three places, where they had formerly hewn the same, and where adits down at the foot of the hill went far under the earth, or the chalk hill. I was as far in as the ends of two of them, one of which was longer than the other. The former went as far as 40 poles—660 feet under ground.

At the entrance into the hill the same was walled round for about 12 feet, as a door to this *Freestone*, to prevent the *Hurlok* on the steep side of the hill from slipping down and closing up the entrance again. But after one gets farther in, it was not any longer walled, but the roof and walls consisted entirely of *Freestone*, just as nature had set it there. When anyone wished to enter, a light, which was carried in the hand to light oneself with, was lighted at the entrance of the adit. For after one had come 6 or 7 fathoms into the mine, there was no more daylight, but it was coal-black darkness as of night. The breadth of these adits under ground was for the most part 6 feet, the height 7 feet. Still the breadth and height were sometimes a little greater, sometimes again somewhat less. The water now trickled down everywhere through the roof, or vault of the adits, **gângarna**, from the hill above, **ofvan ifrån backen**, which was said to come from the snow and rain which had collected on the hill in the winter-time, but in the summer, according to the unanimous account of the workmen, this is everywhere as dry as it is on a dry highway road. The carls avail themselves of this water which is thus filtered down, **silas ned**, when they would sharpen their tools with which they perform their work, but for nothing else. Both roof and walls were very uneven, for sometimes the sides projected, &c., some-

times went in hollows, according as [T. I. p. 289] it occurred to them to hew the stone, and its natural divisions. The adits into the chalk hill went mostly horizontally, yet they sloped a little down in some places. On both sides of the main adits there were other adits, both *ad angulos acutos, rectos, et obtusos*, so that if the entrances of all these cross-galleries had been open, this would have been to one unacquainted with them the worst *Labyrinth* and maze, **irrgâng**, there could possibly be, but these adits were now mostly filled up with the loose bits of *Freestone* which had been broken off in the process of hewing.

The stone divided itself here in the mine all in cracks or fissures which all went from above downwards, **ofvan ifrân nedât**, more or less perpendicularly, but no fissures ever ran horizontally or very obliquely, which was the unanimous account of the workmen. These fissures were sometimes broader, 6 inches wide or more, sometimes quite narrow, but nearly all very deep, so that a stick 4 feet long could be stuck into them without reaching the end of them. These stones clear each other somewhat perpendicularly *ad angulos rectos*, or as though the whole of the lower part of the chalk hill inside, as it were, consisted of four-sided pillars, placed perpendicularly, yet of unequal thickness, that is to say, that some of these square pillars were larger, some less. Similarly the sides also are not of the same breadth, so that when on one pillar all four sides are of equal breadth, on another only the two opposite sides may be of the same breadth—*e.g.*, two of the opposite sides may be 6 feet broad, but again the two other sides standing opposite to one another [T. I. p. 290] are not more than 4 feet, 2 feet, or 18 inches broad, and so forth. One does not here expect an absolute mathematical equality in breadth of the four, or of the two sides which stand

opposite to each other, but one is content if only they are somewhat about the same breadth. Thus these stones naturally clear each other perpendicularly on all sides, and form as it were perpendicular sides of cubes and oblongs, but they are never naturally divided horizontally, but all horizontal division must be effected artificially. When the carls wish to have a stone broken horizontally of any perpendicular height or thickness, they hew with their picks, **hackor**, a horizontal line where they wish it to be divided, and then knock wedges of iron into it, by which they spring it loose horizontally to any thickness they please.

The loosened pieces are afterwards carried out on a low wagon or truck, **vagn**, which instead of four wheels has two rollers, **kaflar**, of ash, one at each end. The diameter of each roller is nearly 1 foot. The body of the wagon is made of solid oak timbers. This wagon, with the stone which lies upon it, is drawn by the carls along the adit till they get it out to the day, and if they afterwards wish to have it up the hill at the entrance of the mine, it is wound up along the road with a windlass, and is so drawn to the place where they intend to hew and work at it.

The stone, down in the mine, and when it was first hewn, was of a grey or clay colour, and so soft that it could be cut with a knife as easily as a hardened or dry pot-clay, **spik-lera**. Similarly one could then [T. I. p. 291] with the hands and fingers break it in pieces, provided the pieces were not too thick; but when it had come up to the day, and lain for a time in the open air, it became very white, although not quite so white as chalk: for it could be seen that there was a considerable difference, if one wrote with a piece of chalk on a wall built of this stone; which I tried, and the man who had the direction of the mine, also showed me. Similarly it has also the

property that after it has come into the open air it always hardens more and more as it gets older and comes to lie longer in the open day. Hence it is, that as soon as it comes out of the mine or stone-pit, it is worked by the carls, while it is still soft, for any purpose they please and which it can be used for.

That these chalk hills where this stone is quarried have not been as they are from the world's beginning, the various *heterogenea* seem to testify, which are often found in hewing in the same, and of which we noted the following:—

1. **Kesbällar.** *Balls of iron pyrites.* For the most part round and spherical, uneven on the surface, sometimes externally ochre-colored, sometimes shining like a ball of iron pyrites, **Svafvel-kes.** When they were broken asunder, it was seen that a centre existed nearly in the middle of the stone from which *radii* proceeded to all sides of the periphery. The carls called them *Crow's Gold*, that is, **Kråke-guld**, and did not know that they were of any use. When laid in the fire they burned, and emitted strong fumes of sulphur. These lay here and there in the stone. They had a considerable weight, nearly as great as that of a piece of iron of a similar size.

[T. I. p. 292.] 2. **Trä-rötter**, *roots of trees.* The labourers said they sometimes find pieces in this stone of the thickness of a carl's arm, on which not only can the bark be seen and separated from the tree within, but also it is plainly seen that they are small pieces of oaks. Such fragments seldom occur here of more than 1 foot long. I was so lucky as to get here a stone in which such a twig or root lay, which the carls hewed loose, together with a piece of the stone, and gave it me as a rarity. The twig in this stone is about the thickness of a little finger.

3. *Concha, Pectinites dicta*. The shell called P. occurred in great numbers in these stones. Seldom was any side of a stone hewn flat on which was not found one, if not more of its shells. The number of cockles, **strimmorna**, was also not equal upon all the shells. The small ones, the thickness of a nail, here formed the greatest number.

4. *Concha, Ostrea dicta*. *Oyster shells*. We saw two of these which lay in the side of a large stone which we had not liberty to hew asunder. They were so *naturella* that it seemed as if some one had taken an oyster shell and crammed it into the stone. The man who had the supervision of the mine said that such natural oyster shells are very often found in this stone when it was hewn asunder. These *oyster shells*, as well as the aforementioned *Pectinites*, always lay, according to the supervisor's account, horizontal in the stone as it stands in the mine, or so that they turn the convex side down and the concave up.

[T. I. p. 293.] We could not see many *heterogenea* here, nor did the supervisor of the miners know of many kinds, however much we questioned him about them.

The use of this freestone, and the purposes it is used for, are various. The principal is to build houses of it, when it has first been hewn here at the mine into a four sided oblong form. Likewise it is used for window-frames and door-posts, and arches over fire-places, windows, and doors, for several kinds of pedestals and pillars, the bottoms of baking-ovens, and other such things. Most of the churches in this district are entirely built of this stone, which indicates the great age of this stone-mine. A quantity of it is carried to various gentlemen's estates round to build houses and other things. The small pieces which are struck off and chipped in the mine, when the stone is

broken loose, are used, partly to be carried on to the roads to fill up the deep wagon and cart-ruts; partly they are carried home by some farmers, brayed into fine dust mixed with water, and worked into a cement, **bruk**, of which the floors of malt houses and 'lodges,' or the part of the barns where they thrash corn, are made, because this, thus prepared, binds very strongly together. I asked the carls whether lime can be burned from this stone? They all answered no, and added that one may burn it as long as he likes, but he will never make lime of it—which I leave there. Likewise they said that it is no good for laying as a floor, because it softens and is reduced to a sediment by water which comes to stand upon it [T. I. p. 294]. The tools and other things which the miners use here at their work are the following:—Inside the mine, where the stone is hewn loose, there are used only a pick, iron-wedges, and a mallet, **hacka, järnviggar, och klubba**. The picks or pickaxes, **hackorna eller yxorna**, exactly resemble the picks which we use in Sweden to hack mill-stones with, only that these English ones are very sharp, and are often sharpened. The iron-wedges and mallets are of the ordinary kinds. They avail themselves of the before described (p. 290, *orig.* 294 *above*) wagon to carry the larger stones out of the mine; but small bits are carried out with a wheel-barrow. All the labour in the mine is performed with a light, because not the least daylight can get to the places where they work, but when the light is put out or taken away, it is pitch dark. After they have got the stone to the place they wish, they hew it with the aforementioned picks, of which some are larger, some smaller, some are broader, others narrower. With these the stone is hewn tolerably even and flat on the sides. If anyone wishes to have a very broad stone, or any other narrower stone in half, a long saw is used, with which

one or two carls saw it asunder, just as they please. To make the sides even, and the corners square, a ruler or straight-edge and set square are used, **brukas lineal och vinkel-hake**. To finally make all quite plane and smooth, they use an iron scraper or rimer, **skaf-eller slät-järn**, with which they scrape or shave, **skafva**, it flat.

Down in the mine which went under ground, were set here and there on the walls of the adits fast-stuck shoots of *Wild Thyme*, **Timjan**, sweet briar, **Törn-rosor**, &c., about which the carls related that if these are set there fresh in the summer time, they will remain there green and as fresh, and smelling as sweet in a couple of months' time.

Some whom curiosity had driven [T. I. p. 295] down or into this mine had written their names with the date on the walls.

I asked the carls whether those who continually labour in these mines are affected by any particular illness above others? They answered that they for the most part get to enjoy good health, and are not aware that they are exposed to more illnesses or cramps than others. It is also very seldom that any stone falls down by itself from the roof into the adits. They remembered only one unlucky accident, which had been timed in such a manner that a carl had been killed by a stone which fell from the roof and crushed him to death. This may doubtless have been the god-forgotten man of whom Mr. Ellis tells in his "Shepherd's Sure Guide," pp. 231-2.

The carls also said that they had not remarked any sign of approaching weather from this mine.

When this stone is hewn, sawn, or scraped with an iron, it smells and stinks like a *Stink-stein*, **Orsten**.

The place and entrance to the mine was well on for 20 fathoms (120 feet) perpendicular depth below the highest summit of the chalk hill, if not more.

In several places appeared unsightly large pits, **gropar**, which now on the bottom were overgrown with grass, where they in former times had hewn up this stone. The workmen told us that in one and each of the same pits there is a hole or *adit* in under ground, but that the entrances to them were now fallen in. The deepest hole which was 40 poles into the hill where they were now working, and in which I was, was said to be over 500 years old. The whole mine was said to have been worked for 1,000 years. There was a house or two [T. I. p. 296] here built of this stone thatched with straw, in which the workmen took their meals, kept their tools, and worked in bad weather.

**Âkrarna.** The ploughed fields which lay on the chalk hills over or upon the mine were sown either with wheat or black oats, which were both said to grow on this soil very luxuriantly. But other kinds of crops do not flourish there so well, because the earth is too dry.

[Here omit 16 lines. The art. '**Krita förvandlad til flinta,**' in which Kalm records a superstition that chalk lying on fields exposed for some time to the sun and open air is changed to flint.]

### **Rinnande vatten genom Källare håller drickat svalt.**

*Running water through cellars keeps the beer fresh.*

In Eaton [Bray] where we dined, the landlord showed us his cellar in which he had his ale, **öl**, and beer, **dricka**, which was situated close to a little running beck, and so arranged that the water came to run in the cellar right under the middle of the beer-barrels. On either side of the cellar was a row of beer-barrels, and the water ran [T. I. p. 297] under each row, for which purpose it was also at the entrance to the cellar divided into two branches. He assured us that the beer never turns sour in this cellar

in summer, but is kept quite fresh by this water running below. When he wished, he could always exclude the water from the cellar, if only the hole was closed again, through which it ran in; when it flowed its course in the beck itself which ran close by the cellar.

### At stiga til hästar från en trappa.

*To mount horses from a step.*

Everywhere here at the farms in the country and in the small places, there was a little **trappa** or 'mounting-step,' built 3 feet or 4 feet high, with steps up to the highest part of it, on which the men, but especially the women, went up when they wished to set themselves in the saddle upon the horse. This mounting-step was sometimes built against the wall of the house; but at times also it stood by itself alone out in the yard or out on the hill.

### Qvarnar. Mills.

On the tract where we went to-day we saw two or three windmills, built in the same way as is most usual with us in Sweden. We also saw a water-mill at one place,\* which differed in nothing from ours more than that here there were quartered a frightful number of large rats, which they called *Hanoverian* rats.

### Åkrars belägenhet, &c.

On the south side of *Edgeborough* there were very large fields. They were all laid out in *broadland* and **tegskifte**, but not the smallest acre-rein, **åker-ren**, or ditch was found on them. These last, however, were not required, because they lay sloping enough. They were now devoted to crops for this summer. We remarked

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\* There are now three water-mills at Eddlesborough, and one at Totternhoe. [J. L.]

p. 298 original mss. These windmills.

here what we [T. I. p. 298] had also found before on all much-sloping fields in the whole of this district, that the water-furrows between the 'lands' were not drawn from the highest parts of the fields to the lowest, but across, and almost parallel with the beds of the valleys, which was done that the water in heavy rain might not wash away the mould and the sown crop, as it would otherwise do to some extent if the water-furrows ran right down from the hill to the valley, which is prevented by drawing out the ploughed fields and furrows in the aforesaid way.

**Fåra-fålla på åkrar, och dessa Kreaturs mångfaldiga nytta.**

*Sheep-folds on the arable fields, and the manifold uses of these animals.*

Sheep dung and urine are here considered as the choicest manure for arable land, and the folding of sheep on fallow land is reckoned such a useful thing that it cannot be paid for in money. It is also only through sheep that many a poor man has all his food and the necessaries of life. The thing goes on thus:—A poor man lays by something by labour, or how he can, so that he is just able to buy a few sheep—the more the better. Thereupon he goes to a farmer and offers to fold his sheep at night on his fallow fields, if the farmer will give him a reasonable payment therefor. The farmer is quite satisfied with an offer which is so good for his fields, and agrees with the owner of the sheep to pay him a certain sum for every acre of land of his on which he folds his sheep. If now the sheep-man sees that the farmer will not give him so much as he thinks he has a right to ask, he tells another farmer about it, and always strikes a bargain with the highest bidder, or where he gets the largest [T. I. p. 299] profits. When the agreement is

entered upon, the sheep-man drives his sheep in the day-time to pasture on the *Common-lands*, or **Almäningar**, and [common] 'arable-field-pastures,' **betes-åkrar**,\* or also on the farmer's own land, where he always has freedom to pasture them, because they by the droppings which they leave after them always pay for what they eat. The abundance of all kinds of *weeds*, which grow upon the fields, gives them also an abundant feed. The sheep-man goes himself to pasture with them, **Fåremannen går sjelf vall med dem**, and in the evening he drives them out on to the fallow-fields of the one whom he has made an agreement with, where they are folded at night in the same way as has been described above [p. 262 orig. 263 above]. The more the sheep-man's sheep are increased, the more acres of land can he manure in the year, and, consequently, the larger is his profit. When it is very bad weather, he feeds them at home at night with all kinds of straw and hay, which he afterwards converts into manure, in the manner which has been described above, and sells the same. The mild nature of the air here in England which allows the sheep to go out to pasture the whole year, summer and winter (and in consequence nearly all the time they are folded on the arable), causes the profit on a small flock of sheep to be considerable, especially when the advantage of England is added to that, that they have here no need to fear wolves, **vargar**, which are not found in this country.

The sheep's wool, and the manure collected at home in bad weather, from the straw, together with the sheeps' droppings, all of which the sheep-man can sell, in addition to his being able now and then to sell some sheep to the butcher, richly repay the few pence he had

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\* Of course these, which are only pastures after the crops are carried, disappear with the enclosures. [J. L.]

laid out on hay and straw for the sheep at times when bad weather had compelled him to keep them at home. Some assured us that when a man is owner of thirty or forty sheep he can [T. I. p. 300], by only folding them on another man's arable, gain for himself in the year from £10 to £12 sterling. Others said that if a man has 150 sheep, he can in two weeks' time just manure an acre of land with them, and receives commonly from the farmer 16s. in payment for each acre of land he so manures.

The sheep are kept no more than one night on each place in the field, but they stand tolerably thick. The farmer leaves the man entire freedom to bait his sheep in his own way, and pays him, nevertheless, the above-named *summa* for each acre of land. Some of these sheep-men, **Fåra-män**, sell their sheep in the winter, and buy others in the spring instead, from the districts where they keep many sheep. They do this for the reason that in mid-winter they cannot so easily fold sheep on the arable, but are then often obliged to keep them at home and feed them with all kinds of straw and hay.

Late in the evening we returned to *Little Gaddesden*.

*The 8th April, 1748.*

### **Kyrko-tak af halm eller Ljung.**

*Church-roofs of straw or ling.*

Mr. Ellis told us that he had seen, on his travels in Suffolk, churches with stone walls, but for want of something else, thatched with straw in the same way as houses are here thatched with it. Such a straw thatch he said may last 100 years. A gentleman from *Cumberland* told us the same, that in one place and another there are churches in *Cumberland* thatched with ling.

[T. I. p. 301.] **Löf til bränsle.** *Leaves as fuel.*

Mr. Ellis told us that poor folk use to collect the leaves which fall down from the trees, dry the same, and use it for fuel.

### **Huru kalk brännes af Krita.**

*How lime is burnt from chalk.*

When I to-day questioned Mr. Ellis about the process how lime is burned from chalk, he bade me accompany him to a place where they burn it, which I did, and found it done as follows:—

Here was an ordinary walled kiln, **ugn**, in which bricks are burned. In it lime and bricks are burned together and at the same time. The chalk is first dug up in large or smaller pieces out of the chalk hills and is carried to the brick-kiln. Then, when one wishes to burn bricks, the kilns are walled over nearest to the fire with bare chalk, and that in the quantity which one wishes to have of lime, or has of chalk, but not more than that the bricks also may be burned through.

The largest pieces of chalk are laid nearest the fire and the smaller ones on the top, **ofvanpå**. Above, **ofvanför**, the chalk are laid the bricks, **tegelstenar**, which are burned in the usual way. After that a fire is made in the kiln pipes, **ugns-piporna**, of which there were two. First of all large wood is laid in, with which the kiln is made hot. Afterwards only small bundles of twigs, **ris-qvistar**, are used. *Genista spinosa*, *furze*, with *grass* and *moss*, or also *Brackens*. With these the burning is continued for three or four days and nights, **dygnen**, when both the bricks and the chalk are full-burnt. After the bricks and chalk have somewhat cooled, they are covered over on the top with moss and *furze* blended together, such as they had cut and bound together on

the common.\* At the same time all the kiln-mouths are also stopped, so that no moisture may draw in. Thereupon the bricks are first taken out and afterwards [T. I. p. 302] the chalk, which chalk is now, after burning, much lighter than before. It is then slaked with water, like another unslaked lime, when it falls asunder into a fine white meal or powder, which is the lime with which they here build houses, manure arable fields and meadows, etc.

**Får-bete, som är godt.** *Sheep-pasture which is good.*

I asked Mr. Ellis what the nature and quality of the sheep-pastures was here in England in the Provinces, where they had the best sheep and the choicest wool. He answered, all the sheep pastures in the said Provinces consist of bare high chalk hills or escarpments, **kritbärg eller backar**, yet differing from these districts here in *Hertfordshire*, in that there are no hedges, but all common land and open plains. He said further that the sheep will not thrive so well in this district, where there are too many inclosures surrounded with living hedges, although the pasture itself is good enough; but least of all will they flourish on wet places and *Vale lands* where they always fare ill. He added that the place the sheep should thrive best upon, ought to be dry hills, where the wind has free access on all sides, and is not hindered by hedges, &c. There should be no sumpy places. The higher the place lies up in the air the better for the sheep. If the meadows lie low, but consist of salt-grass, the sheep also thrive tolerably well, although they do not make such fine wool.

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\* På fältet. Ivinghoe Common. See T. I. pp. 197-8 and p. 256 *orig.* and pp. 197 and 256 above. [J. L.]

### Hushållningen in Cumberland.

From a man from Cumberland I learned the following. There are no chalk hills, but only high granite mountains, **gråberg**. The sheep are much smaller than those in other parts of England, and the wool considerably inferior, but the flesh good. The horses not of so large a kind as here. [T. I. p. 303.] The sheep go out and bait the whole winter. A great number of cows are kept there. The cheese, **osten**, which is there made is not so good as in other parts of England; but the butter, **smöret**, is beautiful, and is bought there for many places. The swine there are beautiful and fat, and every year a multitude of them are driven from thence to London. Very little wheat is sown there, but rye largely, and still more barley and oats, of which two last most of their bread consists. Earth-walls, **jord-vallar**, are used mostly as fences, **til stängsel**, around their arable fields. In ploughing, **åker-körsel**, they mostly use horses. In the river which divides *Cumberland* from *Skottland* are found the best salmon which occur in England. The farmers are mostly themselves the owners of their farms, or the home, **hemma**, they live at. It is rare to find any beeches there, but oakwoods enough. No goats are kept there. The houses are in some places built of clay and straw mixed together, but in some places in *Skottland* the walls of the houses are made only of grass turfs, **grästorf**, and thatched with straw or ling. The fire-places and fuel are used in the same way as in England, viz: without, **spjäll**, coal is what they mostly burn. Carts are mostly used to drive in. The district is very cold in winter-time. Most of their manure for the fields is cattle dung.

*The 9th April.*

In the afternoon we walked about several arable-fields

and meadows, as well as *inclosures* to make notes on one thing and another.

### Af hvad växter höet består.

*Of what plants the hay consists.*

On p. 227 *orig.* 225 above, are enumerated of what plants the hay consists in one of the Duke of Bridgewater's hay lathes, **hölador**. [T. I. p. 304.]

To-day we amused ourselves by seeking out and describing the plants which occurred in a haystack at *Hudnall*. The hay smelt incomparably sweet, so that there could hardly be a more agreeable scent from hay. The owner said they had no other art with it than to take care that it is dry weather when the hay is cut, and the same dry weather will require it frequently to happen that it is cut the one day and before the evening of the next day it stands in the haystack; only that it has necessarily been turned and dried before it is set in the stack. He ascribed the good scent that the hay had only to the goodness of the soil. How it is with this, I leave there, but this I know, that I have seen not only here where the soil, **jordmon**, was blended with chalk, and on the chalk hills, but elsewhere in England where the soil consisted of *Gravel*, **grus**, and where no chalk was found for several miles—I have seen hay, which in colour was somewhat red, **til färgen ronnat något**, and which at a distance many might have taken for spoilt, but which had nevertheless, the loveliest scent that hay can ever have, so that it was a pleasure to smell it, and which besides that was eaten more than greedily by horses and cattle. The art, **konsten**, by which this was prepared, shall be discussed a little farther on. As this hay which we saw to-day was grown here on high banks or hills, **hôga backar**, we sought diligently to see whether we could not find Linnæus' **får-**

**gräs** or **får-svingel** in it, but it was labour in vain. We saw not a sign of it. For the use of those who know how to apply the principles to the care of meadows, I will give a list of the plants of which the hay consisted. In the same way as I have done before I will set down the plants in the order of their abundance. They were the following :—

[T. I. p. 305.] 1. **CYNOSURUS, Kambexing**, Linn. *Fl. Sv.* 31 was commonest of all [C. cristatus.]

2. **Fälthven**, (Linn. *Fl. Sv.* 62) very common. The fine blades of this made here the best grass-growth and the most hay. [Agrostis capillaris.]

3. **ANTHOXANTHUM** (Linn. *Fl. Sv.* 29), enough. [A. odoratum.]

4. **Hvit Väpling**, White Clover, much. [Trifolium repens.]

5. **Hundexing**, (Linn. *Fl. Sv.* 83) tolerably common. [Dactylis Glomerata.]

6. **LOLIUM PERENNE**, some. [Rye grass.]

7. **Röd Väpling**, red clover.

8. **Ängs-svingel**, 91. [Festuca Elatior.]

9. **Ängs-grön**, 77. [Poa angustifolia.]

10. *Plantago*, 123. [P. Media.]

11. *Lotus pentaphyllos* flore majore luteo splendente,

C. B.

12. *Dens Leonis*, Linn. 627. [Leontodon taraxacum, Dandelion.]

13. *JACEA nigra* 709, [Centaurea Jacea.]

14. **Mjök-tistel**, Hieracium, 639. [H. umbellatum.]

15. **Ängs-syra** (Linn. *Fl. Sv.* 295). [**Äng-syra**. *Rumex acetosa* Linn. *Lilja Sk. Fl.* 239, *Sorrel*.] Each of the foregoing group was found here in tolerable abundance.

16. **GRAMEN LANATUM** Dalech 67. [Holcus Mollis.]

17. **Äng-hafre**, 96. [Avena pratensis.]

18. **Ängs-Kämpe**, 50. [Phleum pratense.]

19. LATHYRUS Sylvestris lutea, 599. [L. pratensis.]  
 20. **Darr-gräs**, 80. [Briza Media, *Quaking grass*.]  
 21. **Röd-svingel**, 93. [Festuca rubra, subsp. of F. ovina, Hooker, Stud. Fl., 1870, p. 448. *Fescue-grass*.]  
 22. TUSSILAGO VULG. *Coltsfoot*. [T. farfara.]  
 23. EQUISETUM pratense.  
 24. BRUNELLA. [*Prunella vulgaris*, *self-heal*.]  
 25. Millefolium vulg. alb., Bauh. Pin., 140. [*Achillea Millefolium*.] *Yarrow*, *Milfoil*.  
 26. CERASTIUM Villosos-viscosum 379. [C. Triviale Link, is the C. Viscosum Linn. of W. Hooker and Arnott, see J. Hooker, St. Fl. 1870, p. 55. *Mouse-ear Chickweed*.]  
 27. BELLIS Sylvestris minor C[aspar] B[auhin]. [B. perennis L. *Daisy*.]  
 28. LINUM Catharticum [Linn. *Purging flax*.]

Of each of this last group there was found only a single example.

### **Klädes-lappar til gödsel på åkern.**

*Rags for manure on the arable.*

We afterwards went over small *inclosures* which were sown with wheat, partly in *broadland* and partly in *fourthorough-stitches*. Everywhere on these fields lay small pieces of clothes or *clothes-laps* and *clouts*, or rags of all sorts of different colours, some of which lay down in the ground, others on the surface. They were bought from a tailor in London, and carried here from thence, and laid out on the fields as an excellent manure to increase [T. I. p. 306] the growth of crops. The soil, **jordmon**, was here the same brick-coloured earth as is found everywhere on *Chilturn Land*, but in addition these fields were very full of flints.

**Bökars växt och ålder.** *Beeches' growth and age.*

On the north side of a hill there were several beeches

cut down, where we passed the time for an hour to see their age. All these stood in the open air not close together, but far away from each other.

A beech trunk was measured which had at the large end fifty-four sap-rings. The diameter was just 2 feet. The sap-rings which were found nearest the heart, **kärnan**, were narrowest and smallest, **smalast och smärst**, from which they grew larger, *gradatim*; the further they lay from the heart out towards the surface, the larger they were. The length of the log was 9 feet. At the small end there were forty-four sap-rings, and the diameter was 19 inches. The distance between the heart and the surface which had turned towards the east, was 7 inches, the other 12 inches was all on the west side.

Another beech trunk had at the large end seventy sap-rings. The diameter could not be measured where it was cut off at the roots, because the stem toward the roots branched out so much on all sides; but 2 feet 6 inches above the place where the large end was cut off, the diameter was found to be 19½ inches. The length of the trunk was 17 feet. At the small end there were 59 sap-rings; the diameter 14½ inches.

Another beech-trunk had at the large end 51 sap-rings. The diameter was there 2 feet. The length of the log 10 feet 3 inches. At the small end there were 41 sap-rings; the diameter there 16½ inches. [T. I. p. 307.] Always when the diameter of a tree was measured, the bark was not included.

*Hedera ganska lång. Dess växt och ålder.*

*Ivy very long. Its growth and age.*

In a wood, **en Skogs-park**, we saw 3 or 4 bushes of *Hedera Arborea* C.B., which were the highest and longest I ever yet saw.

They had twined themselves around beeches, and climbed up them right to the top. Their green leaves covered the beeches so as to make them look at a distance as if they were covered with verdure, and with full fresh leaves close to the stem. The height of these ivy-bushes, to the best of our judgment, a good 60 feet if not more. We cut off one of the thickest, 4 feet from the ground, to see how old it was, and measured its thickness. The diameter was  $1\frac{3}{4}$  inches, and it had here thirty sap-rings, which showed its age in years. As it had climbed up the tree it had everywhere driven in a number of fibres and roots into the same, from its stem, to hold fast by. It had branched itself in many branches, which all ran upwards. Some went right up to the top, others wound themselves somewhat spirally round the tree. This is not particularly liked by wood-wards or gardeners, because it injures the trees, draws the nourishment from them, and causes decay.

*The 10th April, 1748.*

### **At förvara rötter om Vintern.**

*To keep roots in the Winter.*

Our host told us that among the best ways that are practised in England for keeping carrots, parsnips, **Mor-rötter, Palsternackor**, and other roots in the winter uninjured by the cold, etc., is to lay them in dry wheat-straw. Mr. Ellis said that some keep them in dry sand [T. I. p. 308] in cellars. Others let them stand out on the land the whole winter, only that the land is covered well over with straw, or something else, so that the cold cannot get at them.

### **Tecken till väderlek af Bellis.**

*Sign of the weather from Daisies.*

It was pleasant to see how *Bellis sylvestris minor*, C.B.,

which here grew in multitudes on all pastures and grass ground, and was now in full flower, drew together its petals when the air was cold, or when it was like rain or bad weather. A great many flowers of *Syngenesia* or *floribus compositis* [*Compositæ*] had this quality.

### **Kes-bällar här och där på åkrar.**

*Balls of iron-pyrites here and there on the fields.*

I have before (p. 291, *orig.* 295 above) given a description of the **Kes-bällar** which lay embedded in the *Freestone* at **Tatternel**, and were found in abundance in the same stone mine. In our walks hither and thither in the fields and in other places in this district we often found these **Kes-bällar**, *Crows' gold*, *Iron pyrites*, either in pits where they had dug up the chalk to carry on to the fields for manure, or also out on the ploughed lands, in many places round *Edgeborough*, as well as here round *Little Gaddesden*. Those which are found on the fields have doubtless been carried there with the chalk from the chalk pits. When these had lain for a time on the fields, the air, rain, and sun had considerably altered their colour and appearance. They exactly resembled a piece of the iron ore which is dug up in bogs and morasses, and were of the same irony rust and ochre colour. The interior looked very much like *Ochra*, although it was harder, but the surface itself retained its radiated sulphurous colour and structure. They had still their former considerable weight. [As these are found here in all chalk hills among the ordinary chalk [T. I. p. 309] so I ask, "May not the bottom of all chalk hills, although it be low down, consist of *Freestone*? May not the *chalk* and *Freestone* differ, if only in the degree of hardness or development, according as they lie nearer the surface or deeper down? May not this which is now *Freestone*, in

former times have been chalk, or *vice versá*? May not the chalk sometimes, perhaps, change first to *Hurlock* and afterwards to *Freestone* or *vice versá*?”\*]

The 11th April, 1748.

### Huru en ny häck anlägges.

*How a new fence is laid down.*

When anyone wishes to erect an entirely new hedge of living trees, either round arable fields, meadows, or other property, it is done here in *Hertfordshire*, where folk are held to be most expert in the art, in the following manner:—

The hedge is planted generally *in lineâ rectâ*. If the ground is free from trees and stubs, a pair of furrows are ploughed straight on, where the new hedge is to be planted. These furrows are turned towards each other, but if the ground is full of tree-roots, so that the plough cannot advance, the earth is commonly dug up with the spade. Some use not to dig up anything on the place they wish to plant, but are content with the mould they cast up out of the ditch. When the earth has thus been ploughed or dug up where the hedge is to be planted, a ditch is dug along and close beside the same, which ditch, after all the earth has been cast up out of it, is commonly 2 or 3 feet deep below the surface of the ground. This mould, which is taken out of the ditch, is cast on to the ploughed-up, or dug-up, earth, at first as much as to make a bank of 1 foot high or a little more. Thereupon, young shoots of hawthorn or sloe

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\* In answer to the questions which I have enclosed in brackets:—

The Totternhoe Stone, a marly sandstone, might be called a development of the Grey chalk, but that it lies at its base, above which the sandy element disappears. The answer to the latter questions is negative. They are separate beds. [J. L.]

are taken, and cut [T. I. p. 310] off obliquely a good 4 or 6 inches above the root, and afterwards planted in the cast-up bank all in a row, or *in lineâ rectâ*. The thickness of these shoots is about the size of a finger, sometimes a little less. They are set so close together that there is commonly not more than 3 inches between each. When they are planted there is made, as it were, a water-furrow right along the whole bank about 4 inches deep, in which these shoots are set by their roots, but are so placed that they do not come to stand perpendicular, but very much leaning towards the ditch, so that they might later on so much the better keep off the cattle. Upon that the furrow in which they are planted, is turned over again, by which mould is cast on to their roots, so that the newly-planted shoots often do not come to stand with their ends over an inch above the ground. The shoots which are commonly used for this purpose are either hawthorn or sloe, which are intermixed, but, besides these, there are set here and there, either at a certain distance or length from each other, or just as they please, small shoots of willows, **Vilar**, *Salices*; beeches, **Bök**; ash, **Ask**; maple, **Lönn**; lime, **Lind**; elm, **Alm**; and other leaf-trees; which are cut off, so that they are as short as the others. When this has been arranged they begin to make the bank, **vallen**, higher, in that more mould is cast up out of the ditch on to the roots of the newly-planted shoots, till the wall or bank, **vallen eller banken**, has been raised 1 foot higher than when they were first planted, and of such a slope that when a stick is laid on the side or slope of the bank there is commonly 18 inches between the row the first shoots were set in, and the summit of this added earth. Herein is now planted, in exactly the same way, a row of hawthorn or sloe, and several of the above-named leaf-trees, whose [T. I. p. 311] roots are

afterwards well covered over with the earth which has been cast out of the ditch. When a perpendicular line is erected from the row the lower planted shoots stand in, it is seen that they stand 1 foot nearer the ditch than the upper row, whence the slope of the bank towards the ditch can be judged.

The earth which is here cast out of the ditch, and in which the hedge was planted, consisted of the brick-colored earth which is found everywhere about here, with some flint-sand and small flint stones among it. On one side the ditch hindered the cattle from getting at the newly-planted shoots to do them any injury, and on the other there were set up, as it were, **ledstängar**, *railings*, or also a dead fence, which somewhat resembled a **gårdes-gård**, similarly to prevent the cattle on that side also from approaching the young trees. It is commonly in the month of October or February that this work is carried out in England. At a place between *Little Gaddesden* and St. Albans there was a new hedge planted in the above-named way, but to hinder the cattle from injuring the young shoots, there were on the summit and along the bank set what I may call **ledstänger**, *railings*.

Down below the shoots there was a deep ditch dug, partly for the same object, partly and principally to get earth in which the shoots could be planted. On the other side of the ditch opposite the hedge, close to the edge of the ditch, there was a dead fence erected to hinder the cattle and sheep from getting down into the ditch to bite off the newly-planted shoots.

In another place there were, with the same object, erected hurdles exactly the same as are here used as folds on the arable, and have been before described (p. 262 *orig.* 264 *above*). These were placed just at the edge of the earth-bank [T. I. p. 312] in which the shoots were

planted, to hinder the cattle from climbing up on to the earth-bank.

*Obs.* In England there is the advantage that nearly in every town and large village there is one or more nurseryman, **Trägårds-mästare**, whose principal occupation is, to sow and plant the seeds of a number of different kinds of trees, and to keep 'tree-schools,' so that they can sell a number of all kinds of different young shoots for a reasonable price to one who requires them. When, then, a farmer, **en Landtman**, wishes to lay down, for example, a new hedge, he goes to such a nurseryman and buys of him as many 1,000 shoots as he requires, which he can at once plant out as a hedge without waiting from the time they are sown till they have grown so large that they can be planted out, which would be too longsome, **för långsamt**, because the hawthorn-berries lie, for the most part, two years in the earth before they come up.

Sometimes a new hedge is made with a ditch on its outer side, as in the afore-named manner, sometimes also, without a ditch, when the mould to plant the shoots in is taken from both sides of the place where the hedge is going to stand. In planting the shoots, it is especially necessary that the soil should be arranged close into and around their roots. If the hedge is laid down without any ditch, a dead fence must first of all be erected on both sides of the planted shoots, to keep the cattle off them, till they are somewhat large.

**Huru en gammal häck förnyas, och en död upresas, &c.**

*How an old hedge is renewed, and a dead fence erected.*

It has been mentioned above several times that no other fences, **stängsel**, are here used around the arable fields, meadows, pastures, orchards, flower gardens, and

kitchen gardens, &c., than [T. I. p. 313] hedges of all sorts of prickly trees, sometimes also of trees without thorns, and when these are somewhat old they are cut down that new scions may shoot up from the cut-off stubs. A dead fence is in the meantime erected for as long a time as the upshooting scions take to acquire a sufficient height, so that they can themselves fence off the cattle. Now, I have just above described how an entirely new hedge is used to be laid down in England, therefore I will here give in detail the latter, or how to renew an old hedge, and erect a so-called *dead-fence*, **död häck**, &c. I will describe it in the manner in which this work is performed here in Hertfordshire, where it is commonly held that the folk understand this work best of all in the whole of England.

When a new-planted hedge is nine years old, it is commonly cut down, partly that the owner may get fuel from it, both for himself and to sell to others, partly that he may get a new and better hedge from the upshooting new scions; for when a hedge has stood for nine years, a part of the trees in it begin to grow old and to go off, so that it is no more so thick as before. In performing this job all the trees are cut down quite close to the ground, which do not grow in a straight line in the middle of the hedge where the dead fence is to be erected; but a part of the trees which thus stand in the middle of the hedge, as many, namely, as one considers on the spot will be necessary, are left to stand till one has entirely cut down the others.

After that, *staves*, **staftrar**, are taken from the leaf-trees which had stood in the hedge, the twigs, **qvistarna**, cut off, and the staves made quite smooth. The length of every *staff* is made 4 feet 6 inches. The thickness is from  $\frac{1}{2}$  [T. I. p. 314] to 2 inches diameter, and sometimes more. These 4 feet 6 inch *staves*, are set all

in a row, where the fence is to be, the one staff after the other, never two staves abreast, so that just 2 feet length is left between every staff, sometimes a little more, and sometimes a little less. These staves are driven a good 4 inches, if not 6 inches down into the ground, and, that this may be done more easily, the carl has a little mallet with which he drives them down. Hereupon be it noted that, if any of the trees which grow along where the fence is to be erected, are found not to be particularly long and thick, they are cut off 4 feet above the ground. The remaining 4 feet stub, is made quite smooth from twigs, and left to stand to be used as a staff or 'hedge-pole,' **stafver**. The more one can get of these the better it is, because they, as root-fast trees, make the dead fence stand steady and fast. After that, the carl takes the longer trees left remaining in the hedge, cuts them more than half through, about 4 inches above the roots, and bends them so, gently and cautiously down along the hedge. This down-bending is begun at one end of the hedge thus:—Let the hedge, for example, go in a straight line from north to south. If the carl intends to begin to *tress*, **at fläta**, the dead hedge at the south end, he cuts the tree standing there a little more than half through, 4 inches or more above the ground, which cutting is done on the north side of the tree. After that he takes hold of the tree, bends it softly and carefully down towards the south; and as the lower parts of these trees are thick, so that after they have been thus bent down they will not further admit of being bent somewhat *serpentiniformiter*, if I [T. I. p. 315] may so call it (by which I mean when it is first on one side of the one staff and immediately after on the other side of the next), he causes the thick stem to lie close against one side of the *staves*, and that commonly on the twiggy side—of which more anon. Yet he regulates this according to the situation of the tree, on

whichever side of the hedge it stands most ; but the upper ends of these trees thus half cut through near the roots, which admit of being bent, he bends right and left *serpentiniformiter* about the staves, that is, if in this hedge which stands north and south he makes the narrow end of this tree to go on the east side of the one staff he causes it afterwards to go on the west side of the next staff, still he mostly arranges it so that the ends of these are turned to the twiggy side. I will at once describe what I understand by the twiggy side, **den qvistiga sidan**. Now, as these turned-down and half cut through trees, are here to perform the same service as **gärdsel** or **gärdsel-trädor** with us, they are commonly laid at the inclination, or in the same sloping manner as some of the **gärdesgårds-trädor**, 'fence-trees' with us, viz., not horizontally but obliquely and sloping, yet so that the inclination is nearer a horizontal than a perpendicular line.

In this way the carl continues from the south end northwards, so that he successively bends the trees which follow in the hedge over those which have previously been bent down, and that nearly in the same way as we in Sweden make a sloping **gärdes-gård**, only that he here leaves the larger ends, as said before, to stand on one side close to the staves, and bends the little end now to one side of the one staff, and then to the other side of the next staff, and so arranges that all the outer ends of these [T. I. p. 316] trees are left on one and the same side of the *dead fence* or **gärdes-gård**, viz., in the foregoing example, if he has turned the end of the first down-bent tree to the east side of the fence, **häcken**, so he ought also as far as possible to turn all the other outermost ends of the down-bent trees towards that side also. The height of the hedge is equal to that of the staves, viz., 4 feet. When the tree is cut near the roots

somewhat more than half through, especial care is taken that the cut or incision in the part of the tree which is to be bent down is made very long, so that rain water and other wet may be all the less able to damage it, as well as that it may so much the better be able to be bent; but the stub which remains down in the ground, one does not trouble himself about how the end of that is cut. And as it is seldom that so many trees grow in the middle of the hedge, that they alone, when they are bent, will be sufficient to fill up the fence with, but there are openings all the same here and there, long sprays and stems, **språtar och stånd**, of hawthorn are taken, which are bent or laid in the hedge in the same way as the little ends of the former trees, viz., that they go somewhat *in formam serpentinam horizontaliter*, or, now on the right hand side of the one staff, and afterwards on the left of the next following, and so by turns always so that the outermost ends are ultimately turned to one and the same side of the hedge, as here, in the example given, to the east. They are especially particular, to in this way wreath or set in hawthorn or sloe down to the ground, to thereby hinder the swine from going through the hedge in their explorations, because both these trees with their long thorns usually deprive them of all pleasure in such a research. [T. I. p. 317.] But that this dead fence may have still more strength, they procure for themselves long sprays either of hazel, willow, blackberry-bushes, or some other tree of which they take two sticks of about the same length, which are twisted, or wreathed spirally about each other on the top of the fence over the others, always so that the ends of the staves, **störarna**, come to be wreathed in between those two sprays, and thus fastened. They begin with this, thus:—

The large end of a spray is set on the one side of a staff

**en stör**, and the large end of another spray on the other side of the same staff. Next, the sprays are bent across each other, so that the spray, whose large end was now for example, on the west side of a staff comes in the next place to lie on the east side of the next staff. So it is commonly done with the sprays at their large ends, where they are thick and stiff, but afterwards they are wreathed spirally, so that they had commonly got in one, if not two spirals between every staff. When these sprays are complete two new ones are taken, and it is continued in the same way along the top of the whole length of the **gärdes-gård**. But hereupon be it noted, that if the trees a little more than half cut through near the roots and afterwards bent down, turn the root ends or the thicker ends, for example, towards the north, and the point or the smaller end towards the south, as they lie in the hedge, these spirally-wreathed sprays ought to turn the large ends, on the contrary, to the south and the little ends to the north, also the work of wreathing them is begun at the north end, because it is believed that the dead hedge is by this means steadier and bound faster, than if they are turned with the ends in the same direction as the large trees, which lie obliquely and sloping.

In respect of this also [T. I. p. 318] care is taken that these spirally-wreathed sprays, all come to lie horizontally.

In most cases the *sprays* were only wreathed once *spiraliter* between each staff so that one and the same spray by this arrangement always came to lie on the same side of the staves. It was also commonly arranged that the small end of these came eventually to be turned to the twiggy side, and if it at any time came to be turned out to the other side, it was always cut off. I have in this description often mentioned the twiggy side, **den qvistiga sidan**. Now, I will say what it is After the

dead hedge has thus been erected as has been described, all the twigs on one side, by preference on that which looks inward, are cut off, so that it is quite smooth and even, but on the outer sides of this dead hedge to which the carls had turned all the points of the so bent down and inset trees, the twigs are cut off in this way, that the twigs near the ground are allowed to go out 2 feet or 2 feet 6 inches from the hedge, but are afterwards cut off shorter and shorter the higher they are up, so that the highest are scarcely 4 inches long.

If one stands on the flat side, and looks over the hedge, and along it on the twiggy side, then it looks like a sloping earth wall. The reason why the twigs on the one side are left so long is that the young shoots and scions which come to run up just between these twigs may in their tender age be shielded from the approach of the cattle by these dry twigs, which are mostly hawthorn.

In several places it was the practice that when they cut down an old hedge near the roots and erected a [T. I. p. 319] dead, in the manner just described, in the same place, they dug close alongside of the hedge on one side a little ditch of 1 foot deep, and the same breadth, which was done for two reasons.

1. The mould which was taken out of the ditch was cast up on, and over the roots of the hedge, which is accounted a choice manure to force the cut-down hedge, both to shoot faster, and to form a larger number of shoots.

2. The ditch on one side hindered the cattle from coming to the young shoots and injuring them. On the other side they were protected by the thorny twigs left remaining, but in many places, in short, in most places, this was neglected, nevertheless, it seemed to be a very wise provision.

All the trees and twigs cut down in the hedge were

collected together, cut into different lengths and bound up in bundles. The stems of the thicker trees, which were of an arm's thickness, more and less, were set out and bound separately together. The twigs and the smaller sticks were also bound together in bundles. Scarcely any twig was left, however small it was, which did not find its place with the others in the bundle, an unfailing sign that the folk here knew to set a right value on the wood, and to be careful of such a precious treasure. It is incredible, however, what use and profit a 'farmer' and **Landtman**, in these woodless districts had from these hedges, which gave him not only sufficient fuel for his own requirements, but put him also in the position to sell a quantity of it to others who had not such themselves.

The larger a tree was, the dearer it was sold. I noted also that more prudent [T. I. p. 320] economists always carried the smallest bundles of twigs home for their own use, and were content with them; but spared all the thicker timber to be sold to others. I even saw one who himself burned brackens the greatest part of the year, and sold all the wood which he yearly got from the hedges he cut down, which was a considerable quantity. Wherever we wandered about we saw large fagots and bundles of larger and smaller timbers, which they had bound together from the cut-down hedges, and left for a time near the hedges to dry, from whence they were either carried home, or sold for ready money. They were also sometimes left for poor folk, who in return did day-work for the farmer.

When a hedge had thus been cut down and arranged, it commonly made such strong shoots, that in two or three years' time it could do service as a barrier, and be in a position to keep out the cattle. The dead fence was then taken away, and carried home for fuel.

The cutting down of these living hedges and the erection of the dead hedges in their place was commonly effected in October and November, in the autumn, and in January, February and March, and at the beginning of April, in the spring, only with this difference that the young hedges were cut down in the autumn, but the old in the spring, which experienced economists had found to be best.

In the hedges there stood here and there large trees, such as beeches, ashes, elms, limes, &c., which were an ornament around the arable fields; but the large leaf-trees are said, however, to have the disadvantage that they by their dripping when rainy weather set in, as it were [T. I. p. 321] killed the hedges which stood under them, besides drawing considerable nourishment from the arable fields close beside them.

The height of these dead fences was, as has been said, commonly 4 feet; but it was also lower in some places, where they had only sheep and no large cattle.

The reason why the trees were cut little more than half through, near the roots, and afterwards bent down, was in addition to what has been given above, partly that the dead hedge might be steadier, partly that young shoots should shoot up where a long-sloping incision was made in the tree so bent.

The hedges here consisted of different trees, such as hawthorn, sloe, dogrose, blackberry-bushes, willow, ash, elm, maple, beech, holly, oak, etc., among which the hawthorn formed the most part, and next to that the sloe. This last was an arrant rogue at creeping under the earth with its roots, so that it was not long among the others in the hedge before it came creeping from them forward out into the fields. Here it so pulled the wool from the backs of the sheep, which sought for the fine grass under it, that large locks of wool remained every-

where on its thorns. Jungström called it **Ull-rjuf**, 'wool-stealer,' in consequence, for which name this bush here gave very good reasons. A little ditch drawn alongside the hedge could easily have stopped its bad habit of creeping far from the hedge. In cutting down a hedge, as soon as the trees which were not wanted for erecting a dead hedge were cut down to the ground, there was commonly dug up a narrow ditch close to the hedge, out of which the mould was cast up on the stubs which [T. I. p. 322] were covered with it that the sun might not injure the stubs, but that they might be forced to make stronger shoots, and strike out many scions.

### **Helge-dagars firande i Ängland.**

*The celebration of Holy Days in England.*

England has nearly the same high-days as we in Sweden, and the Gospels and Epistles for them are also nearly the same; but the Church ceremonies are **ganska skilljaktige**, very different. The sermon itself (in the English Church) which is all read from a paper writing, does not last over half-an-hour. The priest does not interpret in it the Gospel or Epistles, but he takes some Bible text which he explains and moralises over, and it sometimes happens that in the whole of his sermon no more Scripture Texts are cited and expounded than the single one he has taken for a *Text*. Sunday is esteemed outwardly in some things very holy, so that no ordinary work is carried on on this day. To dance, play cards, play on an instrument, to hum or sing dances on Sunday is esteemed a very great sin and scandal, and the man who was so indiscreet and transgressed in these respects, might at least in any town, soon place himself in great danger and risk. But to sit all day at the beer-shop, **krogen**, drink himself drunk, to visit **mindre tuktiga hus**, and pass the day with dissolute scum

is not so rigorously guarded against. On the other holy days, **Helgedagar**, except Sunday, such as the second and third days in great high-feasts, **stora hogtider**, the Feast of the Annunciation, Midsummer-day, &c., a service it is true is observed in the church, but all work is carried on exactly the same as on any week day. In a word, they are observed here in the same way as Apostle days in Sweden.

### **Ängelska Qvinfolkens kläder-drägt, maner, &c.**

*English women's costumes, habits, &c.*

When the English women in the country are going out to pay their compliments to each other, they commonly wear a red cloak, **klädes-kåpa**. They also wear their *pattens*, **järn-skor**, under their ordinary shoes when they go out, to prevent the dirt on the roads and streets from soiling their ordinary shoes. All go laced, and use for everyday a sort of *Manteau*, made commonly of brownish *Camlot*. The same head-dress as in London. Here it is not unusual to see a farmer's or another small personage's wife clad on Sundays like a lady of 'quality' at other places in the world, and her every-day attire in proportion. 'Paniers,' **Styf-Kjortlar**, are seldom used in the country. When they go out they always wear straw hats, **halm-hattar**, which they have made themselves from wheat-straw, and are pretty enough. On high days they have on ruffles, **manchetter**. One hardly ever sees a woman here trouble herself in the least about outdoor duties, such as *tending*, **at vara med**, in the arable and meadows, &c. The duty of the women in this district scarcely consists in anything else but preparing food, which they commonly do very well, though roast beef and *Pudding* forms nearly all an Englishman's eatables.

Besides that, they wash and scour dishes and floors,

etc., for about cleanliness they are very careful, and especially in these things, to wash clothes, and to hem one thing and another minutely.

They never take the trouble to bake, because there is a baker in every parish or village, from whom they can always have new bread. Nearly the same can be said about brewing. Weaving and spinning is also in most houses a more than rare thing, because their many *manufacturers* save them from the necessity of such. For [T. I. p. 324] the rest, it belongs to the men to tend the cattle, milk the cows, and to perform all the work in the arable fields and meadows, and in the 'lodge' and 'lathe,' &c. I confess that I at first rubbed my eyes several times to make them clear, because I could not believe I saw aright, when I first came here, out in the country, and saw the farmers' houses full of young women, while the men, on the contrary, went out both morning and evening to where the cattle were, milk-pail in hand, sat down to milk, and afterwards carried the milk home. I had found, then, that every land has its customs. In short, when one enters a house and has seen the women cooking, washing floors, plates and dishes, darning a stocking or sewing a chemise, washing and starching linen clothes, he has, in fact, seen all their household economy and all that they do the whole of God's long day, year out and year in, when to these are added some *visitors*. Nearly all the evening occupations which our women in Sweden perform are neglected by them, but, instead, here they sit round the fire without attempting in the very least degree what we call **hushålls-syslor**, household duties. But they can never be deprived of the credit of being very handsome and very lively in society. In pleasant conversation, agreeable *repartie*, polite sallies, in a word, in all that the public calls **belefvenhet**, *politesse* and *savoir vivre*, they are never wanting.

They are lucky in having turned the greater part of the burden of responsible management on to the men, so that it is very true what both Englishmen and others write, that England is a paradise for ladies and women. It is true that common servant-girls have to have somewhat more work in them, **hålla något mera uti**, but still this also is moderate, and seldom goes beyond what has been reckoned up above. But [T. I. p. 325] the mistresses and their daughters are in particular those who enjoy perfect freedom from work.

To us in Sweden, where the wife, no less than the husband, is obliged in every way to bestir herself and keep her wits about her, **fika och vara om sig**, to help to win the bare necessaries of life, an English wife would not seem to be particularly well-suited. I have, however, with my own eyes, seen some proof of this, that when constrained by necessity to exert themselves, they have been as clever managers as anywhere in the world, for they are not wanting in sagacity to carry them through the most difficult cases.

*The 13th April, 1748.*

### **Ängars gödning.** *Manuring meadows.*

This work of manuring meadows is mostly performed here in the autumn, after they have carried the hay, when soot and other kinds of manure are spread over the inclosures, **täckter**, sown with *Clover*, *St. Foin*, and other kinds of hay.

### **Huru mycket de få efter en bushels utsäde.**

*How much they get in return for each bushel sown.*

Several farmers said here that two bushels of wheat are commonly sown out on an acre of land, **acreland**, and in return, when the field is well-managed and the year's growth is good, twenty-five bushels are reaped. At

*Ivinghoe* it was related that they get ten bushels of barley, **korn**, for every bushel sown.

**At så laga, det höet blifver grönt och  
välluktande.**

*How to arrange that the hay may be green and fragrant.*

Of the many good kinds of hay here in England I have in particular seen two; the one is quite green and as if it were newly mown, though it may be one or more years old; the other has a brownish appearance, but smells incomparably well, so that no more delightful scent could attach to hay. I asked that clever farmer, Mr. Williams, in what way both these kinds of hay were prepared. He answered [T. I. p. 325] that the hay retains its green colour if it is treated in the following manner:—As soon as it has been mown, and has lain a little time, it is turned over, in which way, if it is sunshine, it is continued the whole day, so that it is turned over nearly once in each hour; because with hay there is the peculiarity, that if the sun gets to shine long on one side and dries it, it loses its green colour and becomes pale. This turning is continued until the hay is dry, when it is carried home and laid in the lathe, **lada**, or rather in the stack. An hay thus managed has a very fragrant scent, although not quite so strong as the following brownish sort, which is prepared thus:—After the hay has been mown it is turned as usual from time to time, and when it is nearly dry, but has still some moisture left in it, which however should necessarily be a certain degree, for which an exact knowledge is required, it is carried home, laid in the lathe, **lada**, but by preference in the stack, when from the still remaining moisture in it, it comes to have as it were a kind of sweating, which far from injuring the hay, or giving it any unpleasant taste or smell, causes it to have the loveliest and most delightful scent which can

ever be in any hay. Mr. Williams doubted, however, very much whether anyone, after a mere account of the process, would be in a position to do this, unless he were present when the hay was so prepared and got to learn to know then how far it ought to be dried before it is laid together to undergo this sweating.

This is the hay which is so agreeable to cows and horses, that they nearly forsake everything else, when they can enjoy this. The farmers also consider this very wholesome [T. I. p. 327] and good for cows, because they become very thirsty and drink much when they have eaten it, and afterwards give an abundance of milk.

Here I will now add, that all the farmers I talked with in this place, unanimously affirmed that it is far better to lay the hay in stacks made and thatched as above described (p. 211 *orig.* 210 *above*) than to lay it in lathes, **lador**. The reason they gave was, that after the stack has been well thatched, the hay can be kept far better in it, because the air has free access on all sides to weather and dry it, while on the other hand that which is arranged in lathes has not this advantage, but is in part, especially that which lies nearest the walls, musty and mouldy. Nor can the hay which is laid in lathes ever acquire the delightful fragrance, which well managed hay, laid in the stack, commonly has, although the kind of grass itself often does not seem to be so choice.

#### **Aske-trädets ålder.** *The Ash tree's age.*

An ash which grew in a hedge, and was newly cut down, had at the large end 104 sap-rings, which gave its age in years. The diameter was here 22 inches. From the 14th to the 30th year the tree had made the thickest sap-rings, but the outermost were very thin. The length was 12 feet. This tree had not had freedom to grow in height, but after it had attained 6 feet in height, it had

been cut off at the top, that it might strike out many shoots, which were cut off after they had grown to some thickness, and carried home for fuel, after which the stub was again left freedom to strike out others, which twigs again, after some time were cut off for the same object. This mode of providing fuel, I have seen very much used [T. I. p. 328] in the districts where I travelled in England. On the stub left remaining in the hedge there was a shoot left, which had run up from the roots, and could at some future time be used in the same way.

Another ash had 92 sap-rings at the large end, which denoted the age. The diameter at that place was 19 inches. Up to the 19th year it had made quite small sap-rings, but in the 19th year it had made one large enough, and in the 20th the largest of all. After that it had had, **Sedan hade hon framgent hade**, large sap-rings, until it reached 38 years, after which they began to be narrower and narrower. The length of this log was 19 feet 6 inches. At the little end there were 80 sap-rings. The diameter was there 13 inches. It was cut and managed in the same way as the former one.

### **Ek-trädets ålder och växt.**

#### *The Oak tree's age and growth.*

We afterwards came across a felled oak, which we also examined, to get to know its age. At the large end were 48 sap-rings. The diameter was 22 inches. After it had attained a height of 9 feet from the roots it had been cut off, that it might strike out many shoots, which could be used for fuel. It had considerably thick sap-rings. On one side of the hedge in which it had stood, was a road, on the other ploughed fields, only small trees with it in the hedge. The soil the same as everywhere here at *Little Gaddesen*. At the little end the sap-rings could not be distinctly seen, for it was cut several times.

[T. I. p. 329.] **Harfvarnas beskrifning, som här brukas.**

*Description of the harrows which are used here.*

The harrows in use here are made in the same way as with us in Sweden. Their length is commonly 4 feet 3 inches, breadth 3 feet 2 inches. Some consisted of five bars, **trän**, and some of four, with always five tines, **tinnar**, in each bar, **trä**. The distance between the tines was commonly 9 inches, the length of the tines 6 or 7 inches. The breadth of each of their sides  $\frac{3}{4}$  inch. They were not fastened, **fast häftade**, as is commonly done with us by being thrust in from below, and then clinched on the top, **nådas ofvantil**, when the part which is thrust into the bar is narrower than that below, but they were here thrust through from above, when the upper end of them was beaten thin, bent *ad angulum rectum*, with a nail-hole in the same crookt and thin beaten part of the iron, through which a nail was knocked down into the harrow-bar, **harf-träden**, which held the tine, **pinnan**, fast. But as the hole for the *tine* or harrow-tine, **harf-pinnan**, was as large as the thickness of the tine, the tine was often shot up, and became loose, in this flint-full earth.

**Jordens tjocklek somligstäds på kritan.**

*The thickness of the soil in some places on the chalk.*

In a thick wood of leaf-trees was a pit, where they had taken chalk, in which we measured the thickness of the soil, which we found to be 4 feet 3 inches. This earth which lay upon the chalk was of the same brick-coloured kind as is found everywhere about here.

Such was the thickness at this place, but in other places it was sometimes more, sometimes less.

**Âldren och växten på Agrifolium.** *The age and growth of holly.*

In a newly felled hedge there lay among other trees a somewhat thick holly, *Agrifolium Raj. Syn.* 466, which at the large end had thirty sap-rings, which [T. I. p. 330] showed that it was thirty years old. The diameter was  $4\frac{1}{2}$  inches.

*The 14th April, 1748.*

**Manfolkens syslor och plägsed här på orten.**

*Men's duties and habits in this place.*

Men have here to take thought for the heaviest part of the cares of husbandry. They have to do all the work in the arable fields, meadows, in the wood, the lodge, and the lathe, **på åker, äng, i skog, loga, lada.**

The women have also bishop'd the care of the cattle on to them, even to the extent that the carls commonly milk the cows, as has been said before. In short, all outdoor work belongs to the men. They have to collect together the wherewithal to feed, nourish, and clothe both themselves and the women, for here the women do not get sore fingers by much spinning, **spånad**, or arm-ache or back-ache from weaving. It is the part of the *Manufacturers* to make up for this, and the men's purses are punished in this matter. The men consequently think it no more than reasonable that they should sometimes take a little rest. [The Village Inn.] We staid here at the *Inn*, where the host kept ale and brandy for sale, and into which the men of this village very often came, to pass some hours over some *Pint beers* (pints of beer). There were seen, sometimes both before and after dinner, a number of labouring men and others killing time in this way. Still, the evenings after six o'clock

were especially devoted to this, after the carls had finished their regular labour and day's-work. I often wondered how some of them could have their means of subsistence in such a way, the more so because ale and brandy were here very dear; but most of all I wondered over this, that folk who could only provide food for themselves, their wives, and children, out of daily wages, **dags-penning**, could spend time and money in this way. It was, however, not unusual [T. I. p. 331] to see many sit the whole day at the inn. But the custom, **maner**, of the country that friends and neighbours come together, sit and converse, the abundance of money in this country, the ease with which a man could in every case have his food, if only he was somewhat industrious, seem to have conduced to this result. However, I more than seldom saw anyone imbibe so much that he became drunk from it.

Ale, **öl**, was the drink that was most used here. Brandy was seldom asked for. It only occurred to me, a foreigner, how folk, who commonly are so self-seeking, **fikande om sig**, could spend often a great part of the day in this way. This manner of life was customary at all the places I travelled through in this country. It is not to be wondered at then, if a great many labourers and others, however large the daily wages and profits they can make, can, for all that, scarcely collect more than what goes from hand to mouth.

*Tussilago på åkrar. Colts foot on arable fields.*

On the greater parts of the arable fields, which were somewhat damp, *Tussilago vulg.* [Coltsfoot, T. Farfara] grew in great abundance, and that mostly on the ploughed plots which had been sown the year before.

**Göken**, the *Cuckoo*, I heard to-day the first time this year, though some said they had heard it a week before.

**Mullvads-högar upkastade.** *Mole-hills cast up.*

I have often before said that in this place are found a very great number of moles. The earth and mole-hills which they had cast up on the meadows, the farmers caused to be spread out over the meadow, that they, in any case, should not originate any hillocks, **tufvor**, on them.

[T. I. p. 332.] **Bökars ålder och växt.***Beeches' age and growth.*

Below the house where we had our lodgings was a wood of high and thick beeches. Among them were some cut down, on two of which we counted the sap-rings, to see their age and growth, and to gain from that some idea of the fertility of the soil. One of the beeches which lay here had at the large end 162 sap-rings. The diameter there was 2 feet 10 inches. The length of this beech-stock was 20 feet. At the little end there were 142 sap-rings, and the diameter was 2 feet 4 inches. Another beech in the same park had at the large end 168 sap-rings, or years old. The diameter at this end was 3 feet 5 inches. The length was 18 feet 6 inches. At the little end there were 156 sap-rings, and the diameter was 2 feet 1 inch.

At this point I make only this remark: This wood or park consisted of high and thick beeches. The soil was here the same as is found everywhere about Little Gaddesen, viz., the often described brick-coloured earth, **tegelfärgade jorden**, but the reason why these trees had not come to increase in their thickness in proportion to their age is, that those previously described had grown in hedges, where they had had open air on all sides, a long way between each tree, and the roots had the use of the neighbouring ploughed fields, &c.; but these had stood crowded together where the air was prevented

from getting to them by those standing round. In that position they could only hasten to run up in height. Perhaps, also, it might somewhat have contributed to this, that the ground had always been overgrown with grass, which had not given the tree-roots so much nourishment as where they ran under the cultivated fields.

[T. I. p. 333.] **Huru frukt-trän planteras vid murar och deras nytta.**

*How fruit trees are planted against walls and their use.*

Everywhere I have travelled here in England in the country as well as in and near London and other towns, I saw a particularly profitable custom with the planting of certain fruit trees, which consisted in this:—Around most of the gardens here in England there were built brick-walls of various heights. When anyone had a fruit tree which he wished to be able to bear either early or ripe fruit, the same was planted, if the wall ran from west to east, on the south side of, and close against the wall. Afterwards its branches, **qvistar**, were carefully spread out along the wall, on both sides of the tree, after which a little bit of cloth was taken and bent round the twig, **qvisten**. This bit of cloth was afterwards nailed fast to the wall, by which means the twig or branch of the tree came to be stretched out along the wall. According as the twig grew longer it was nailed fast to the wall with more laps in the aforementioned manner. They began in this way when the tree was little, and afterwards went on so continuously, according as the tree grew. No twig or branch got to grow on the outer side away from the wall, but the tree was obliged only to extend itself on both sides. By reason of the tree thus coming to stand right in the heat of the sun, it could not be otherwise than that its fruit should be very early ripe and very

beautiful. The trees whose fruit otherwise could never be ripened in England ripened quickly in this way as well as if they had been indigenous in England. Apricots, **Apricoser**, Pistachios, **Pistacier**, Peaches, **Persiker**, in their manifold varieties, with other beautiful fruits, were managed in the same way.

They were planted in the same manner against walls, or the walls of houses, which in summer time looked very pretty in consequence, when a choice [T. I. p. 334] fruit tree often overclad the whole wall. No side of the garden-walls or of the house-walls, for the houses were here nearly always built of brick, was left bare and void of them, whether it was that which faced the south, east, west, or north; for they chose out for those aspects such trees as either preferred the morning, noon, or evening sun, or loved to stand in the shade. Thus it is often seen that cherry-trees which bear *Morels*, **Moreller**, were spread out on the north side of the garden-walls or house-walls. In the same way were red and white currant bushes, **Vinbärs-buskar**, planted on the last-named or north side.

### **Halm-hattar.** *Straw-hats.*

I have mentioned before (p. 323 *orig.* 327 *above*) that the greater number of the English women in this district trouble themselves very little about such domestic duties as in other countries form a great part of the occupations of women, but that they had laid most of the burden of that on to the men. I saw, however, in some places some part of the women afford proof that they are not wanting in ability for various things, if only the custom of the country had not freed this sex from such. Here were several women who were very busy in making straw hats which they afterwards sent hither and thither to be sold. The straw which was used for this purpose was only

wheat straw, nothing else. Of this, long straws were taken, which were cut off into pieces 9 inches long, which were bound into small bundles after the tubes had been first cleaned out. Such a straw as has been speckled black by the rain, ought on no account to be taken. To make the straw still whiter they did this: One of the bundles was dipped in water; afterwards sulphur was laid in a round iron ladle, **stöpslev**,\* which had no handle, [T. I. p. 335] and it was set fire to, after which this lighted sulphur, together with the **stöp-slev** was set on the bottom of a can, pint-pot, or similar vessel of the same width above and below. Round about the sides of this vessel these straws, **halm-strån**, are set up, so that the sulphur is in the middle of the bottom. The pint-pot is covered over with a cloth, when the vapour and smoke from the sulphur makes the straw in these bundles much whiter than it naturally was before. When they wish to plait, **flåta**, with it, such a bundle is first dipped in water, so that the straw may be softer, and not break off. The particular manner in which this plaiting is afterwards done cannot so clearly be described in words.†

### **Anmärkningar vid Krita och Flinta.**

#### *Notes on Chalk and Flint.*

It has often been mentioned before in this description of my travels, that the hills in the whole of this district in *Hertfordshire*, consisted only of chalk, **af bara krita**,

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\* **Stöp-slev.** In Ivinghoe village, Sept. 1886, sulphur about the size of a walnut is laid in a shallow circular iron pan, shaped like a scale-pan, nearly 6 inches diameter and about  $\frac{1}{4}$  inch deep. This is set on to live coals which are contained in a circular iron pan 6 inches diameter at top, and 2 inches deep, narrowing towards the bottom. The whole apparatus is called the "Steam-pan," and is bodily put into a box or can with the straw round it, and covered over as described by Kalm. [J. L.]

† Straw plaiting is still to be seen, as described, at every cottage between Hitchin and Tring. The women earn 2d. a day for all they can plait. [J. L.]

and that the surface soil, **öfversta skärpan**, was full of flints, often in such multitudes that the ground, **marken**, could scarcely be seen for them. Here we noted that the most flints lay on the surface, but commonly the deeper they were in a chalk pit the less the number of fragments that occurred. I saw many chalk-pits, on whose sides there scarcely appeared a single flint, while notwithstanding that, the ploughed fields and the soil above were quite full of them.

[Here omit  $7\frac{1}{2}$  lines to bottom of page 335, and  $6\frac{1}{2}$  lines on page 336, recording the superstition of Mr. Ellis and other farmers, that lumps of chalk exposed to the sun and rain hardened into flint.] I made the suggestion that the flint might lie in the middle of the lumps of chalk, and that no one had seen it before it came out on the field, when the air, rain and sun, reduced the chalk itself to a fine meal [which is clearly the true explanation of the appearance of angular flints 'in places where they knew that no flints had been before and which afterwards, when the chalk had lain some time were found full of flints.'] But they answered that then they would meet with a large number of flints in those chalk pits where the chalk is dug or hewn loose for manuring the fields, but they had not found such, or only very few. It is not every kind of chalk that undergoes this change, but it must be a particular sort, because when chalk is carried on to the fields for manure the greatest part of it goes to pieces to a fine meal or mould after it has lain some time on the field in the open air; but only certain pieces of it are left to lie and harden, without thus going to dust, but what kind of chalk this is I cannot say.\*

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\* There is no foundation whatever for this story of the farmers beyond that on clayey parts of the fields on to which they therefore carried chalk, flints afterwards appeared in the manner suggested above by Kalm. [J. L.]

It cannot be the harder kind of chalk which is here called *Hurlock*, because we observed near *Ivinghoe* that there occur scarcely any flint fragments where an abundance of the *Hurlock* lay on the fields . . . . . [Omit nearly 2 lines] . . . Fields situated on the north side of a hill were commonly less full of flints than those on the south side [Omit  $3\frac{1}{2}$  lines to bottom of p. 336, and 9 lines on p. 337, where Kalm adverts to the possibility of flints being carried on to the fields with the chalk manure, and to the practice of picking flints off the fields and laying them in heaps.]

[T. I. p. 337.] When ordinary chalk comes to lie exposed to the weather or becomes wet, it sometimes hardens so that no one can write with it. Besides what has just been advanced, it seems to be tolerably clear that both the chalk and flints behaved so, for we found in some places on the fields large pieces of chalk, which were quite hard, and when we broke them to pieces, they consisted of chalk all through. Others of them had at the centre a flint the size of a pea, or of a bean, others as large as a hazel-nut, and others still larger; but all that which was outside this flint was a hard and half-petrified chalk. This went by degrees, so that from a flint the size of a pea at the centre, and all the rest a hard chalk around it, it went to a flint the size of a closed fist, and still larger, in the middle, so that at last there was only an outer crust of this hard chalk of some  $\frac{1}{4}$  inch thick. . . . [Omit 2 lines.] We saw and collected several pieces in which we could plainly perceive, to all appearance, the whole process from a black fully developed flint at the centre to a loose chalk at the outer surface, and all grades of hardness between these two points, ripe flint and [T. I. p. 338] loose chalk. A great number of flints on the fields had a white chalk-crust, **Krit-skårpa**, round them. Several flints were entire and of the same

quality throughout. Sometimes flints were found of all kinds of curious shapes, which resembled goats'-horns, spigots, etc. In some pieces appeared traces of bivalve-shells, **musselskal**, especially of the kind called *Pectinites*.

When a flint has lain a long time in the sun it acquires a white colour on the surface like a burnt flint, **Kisel-sten**, and in some places among the white it has a bluish colour. In chalk-pits there are often seen *strata* of an entirely different colour, viz., of **tegel-färgade jorden eller svartmyllan öfverst**, the brick-coloured earth or soil on the top, which is a sign that these districts in former times stood under water; for in deep chalk-pits, **Krit-gropar**, there sometimes occur two or more *strata* of such brick-coloured earth with several ells pure chalk above and between them.\*

*The 15th April, 1748.*

In the morning we set out on the journey back from *Little Gaddesden* to Woodford, in Essex.

The whole of the time we stayed at *Little Gaddesden* we got to learn a great deal more of English rural economy from the farmers than from Mr. Ellis, who was very *jaloux* and 'close' about the little he knew of the subject. When we first came to Little Gaddesden he had his *four-wheel-drill-plough* which stood out on the farm; but directly afterwards it was locked up, so that I did not get to see it any more than when Mr. Ellis, with two carls, devoted a whole afternoon to sowing out with it about a pint of seed. When we took our leave, he gave me a leaf written full of various of his so-called

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\* These latter earth beds are 'pipes' in the chalk. The explanation of the flints on the surface, and their absence in the pits is that the latter are dug in the middle chalk which has very few flints, and that the hills are capped by upper chalk which has many. [J. L.]

receipts. For example, 'How to prepare an excellent manure for arable fields.' 'How several [T. I. p. 339] cattle diseases may be cured,' &c.; but he did not disclose the method how all this is to be set going with so much advantage, but set forth only at what price he sold one and all of these *Receipts*. Most of them cost 100 dollars (copper pieces); but then the purchaser was obliged to swear never to disclose the same to anyone else. It is a pity that the man had so short a memory that he himself forgot to practise these receipts on his own farm and land, for his arable fields and meadows did not look as if they answered to that which was promised in these surpassing receipts. He offered to make with me a tour through several counties in England of fourteen days' duration, to instruct me in English Rural Economy, and for all this inconvenience to him, he demanded no more than that I should only keep him a horse, pay his expenses, and find him in everything he required on this tour, together with twelve or fourteen guineas into the bargain. I thanked him for his attention, and asked him to defer this tour till another time. Nevertheless, I asked after all, that he who had travelled so much about in England in the places where the best English sheep and choicest English wool were found, and now also had three tracts on the management of sheep ready for the press, would let me know what districts and kinds of grass they are in particular, which the sheep eat and flourish so well upon? and again what the plants are which are so baneful or injurious to sheep? because this is one of the principles of the management of sheep. Mr. Ellis stood for a little time at this, and remained silent; but in the end said that he had never given it a thought.



## GRAVESEND.

[T. I. p. 475.]



ON the 30th June, 1748, we left London at 3 p.m. in the so-called 'Gravesend Tilt-boat' for Gravesend, where we arrived at half-past seven in the evening. It is a great convenience for travellers to go by this boat. A single person only pays 9d. for the passage down to Gravesend, or for the up voyage from Gravesend to London, but if he has anything more to convey, it is increased to a shilling for one person, or more according to what he may have to take with him.

The moment the water at London Bridge is at its highest, and begins to turn to go back with the fall, this boat sets out, after giving notice for an hour previously by ringing a little bell, that those who wish to accompany her shall go on board. In this boat there is a most comfortable seat. A tilt or shelter is put up over it [T. I. p. 476] so that one has no fear of rain. If the wind is

with the boat, it goes all the faster for the tilt; if it is against her, they avoid it as far as regards the tilt, by lowering the same. We now went on before down to Gravesend, there to wait for the ship, which was soon to follow, and in the interval we had the opportunity of seeing the country round Gravesend.

*The 1st July.*

The country round Gravesend is at once the prettiest and the most delightful that can be imagined. It goes here in hills up and down, all divided into small ploughed fields, meadows, pastures, gardens, **trägårdar**, &c., by quickset hedges, **lefvande häckar**. The hills are mostly of chalk, **krita**. The whole south side of the Thames consists of bare chalk, and here there is one chalk pit beside another, where chalk and flint are taken.

*Papaver erraticum*, 428 [P. Phœas, *Red Poppy*] was here among the wheat and beans the rankest weed. I have never seen it in such abundance as here in the arable fields, for its beautiful red flowers seemed absolutely to cover the fields, but for small pleasure or profit to the owners, because it both smothered the crop, and was, for its untold multitudes of seeds, next to impossible to eradicate.

*The 2nd July.*

**Jord-vallar vid brädden af Thames.**

*Earth-walls on the banks of the Thames.*

In the afternoon we walked along the *earth-walls* which were cast up on the banks or sides of the river Thames to prevent the water at high tide from overflowing the adjacent meadows on both sides of the river. It is well known that at this place there is ebb and flood, **ebb och flod**, *fluxus et refluxus maris*, so that the water in the Thames stream for six hours falls rapidly [T. I. p. 477] outwards and goes lower, and for the next six hours

the river rises and becomes very high, in some places often 12 feet and more perpendicularly higher than it was six hours before. The land which lies on both sides of the river is for the most part flat, **flakt**, level, **slätt**, and low, **lågländt**, so that if there were no obstacle, **hinder**, when the river is high, the water would go over all the land round about, for an English mile on both sides, and sometimes more. They \* had, therefore, when

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\* 'They.' 'De hade derföre.' Kalm, in using the word 'De,' has no suspicion of the difficulty in proving who 'De' were. Camden, Dugdale, and others of the Old Antiquaries, regarded the embankments of the Thames as Roman work. There is one positive statement, to which Lambarde drew attention (*Peramb. of Kent*, written 1570, Pubd. 1576). It is in the Folio Vellum MS. *Augustin[i] Ecclesie Cantuar. Annales*, Corpus Christi Coll., Cambridge, 301, 1. Fol. 96, *bottom line*. 'A<sup>o</sup> Mcclxxix.º,' after other entries, 'Eodem anno inclusus erat primo mariscus de Plumstede per Abbatem de Lessnes mari,' the last word being at the top of Fol. 97. Again, on Fol. 103, *line 6*, 'Anno Mcclxxxiiij,' occurs the entry, 'Eodem anno inclusus est mariscus de Plumstede.' The entries are in abbreviated Latin, and the *Annales* end at the year 1316. I copied the extracts by the kindness of the Rev. S. S. Lewis, [Alas! I must now add 'the late' 1891], Fellow and Librarian, C.C.C. Cant., on May 20th, 1886. The words, 'primo' and 'mari,' under the year 1279, are positive. The marshes referred to extend from Plumsted to Earith. The Manor of Plumsted was given by William the Conqueror to S. Augustin's Monastery, Canterbury (see 'Carta Willelmi Conqs. de Manerio de Plumstede,' in Thos. of Elmham, *Hist. Monast. S. Augustini Cantuar*, Chron. and Memor., 1858, p. 350). The Lands of Lessness Abbey were given, on its foundation, by S. Augustin's Monast. to the Abbot of L. out of the Manor of Plumstede. Wm. Thorn, who had been a monk of S. Augustin's, and who wrote his 'Chronica' of Canterbury some fifty or sixty years after the events recorded, and whose *Chronica* was printed by Roger Twysden (*Hist. Ang. Scriptores X.*, Lond. MDCLII., p. 1930, b.), tells us, Cap. XXVII., that "In the year 1281 a final agreement was made" between the Abbots of S. Aug. and Lesnes concerning an advowson claimed by both. "At length these contentions were settled as follows: The Abbot of S. Aug. ceded, and gave up all right to the advowson" . . . "and for this recognition the Abbott of Lesnes conceded for himself and his successors that they at their own expense after the year next to come '*intrabunt mariscum de Plumstede et Lesnes will inclose from the sea the marsh of Plumstede and Lesnes,*' that is to say, the whole tract which lies towards the east, '*inter gutteram de Borstall, et novam Wallam,*'

the water was low and it was ebb, cast up on the Thames banks high and strong earth-walls which prevent the water overflowing the country inside the walls, which is mostly bare meadow land and pastures.

The breadth of these walls or banks down at their base was 4, 5, or 6 fathoms, the height above the plain  $1\frac{1}{2}$  fathoms, the width at the top about 1 fathom, sometimes barely 4 to 6 feet, so that they on both sides diminished gradually in width from their base to their top. Outside, against the river at the base of the wall, pile-work, *pålverke*, which they took from old ships, was driven down compactly together, everywhere one row thereof. But in some places were two rows of such pile-work, one a little within the other. Immediately within the piles were laid a large number of lumps of chalk,\* together with large flints, to bind the wall against

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\* "Tiers of piles driven close to each other, in rows about 18 inches apart, row from row, the foot of one tier being nearly even with the middle of the piles of the tier below, and the space between the tiers filled with chalk or stone, and these *rooms*, as they are called, succeeding each other, from the bottom or foot of the bank to its top." Wiggins' *Embanking Lands from the Sea* [p. 215, Ed. 1867], Weale's Series, 1852, 12mo. [J. L.]

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between the gutter of Borstall and the *new* wall which Johannes Renger made in Heyflete, *which wall* they will for one month following maintain, 'contra mare,' *against the sea* at their own cost," &c., &c. It seems as though Joh. Renger had finished his portion of the wall necessary to complete the *inning* of this large tract of marsh before the Abbots had done quarrelling, and that the original *inning* took place in 1279 according to the *Annales*, and 1281 according to Thorn. These marshes lay drowned again, through the breaches formed in 1522 (probably from the rotting of the wood of the 'water-gangs' under the walls) for seventy-five years, or till 1606. Lambarde, writing in 1570, says: 'The Great Breach is not yet made up' (*Peram*. Ed., 1826, 8vo., p. 396). As many other breaches from the same cause occurred for two centuries or more up to the beginning of the 18th century on both sides of the Thames, it is probable that all of the Thames walls so breached within that period are of the same epoch. As far as I know there is no other record of the first making of a wall but this. [J. L.]

the attacks of the water. In some places these walls were 3 good fathoms higher than the meadows, ploughed fields, and pastures, lying within and behind them; and  $1\frac{1}{2}$  fathoms higher than the water at ordinary high tides in the river. Sometimes there was double and sometimes treble pile-work outside the wall against the river. The rest of the wall itself was made of the earth which they had dug on the spot. Here and there [T. I. p. 478] was some opening under the walls to the meadows, through which the water could be made to go either to or from the meadows. These small *water-gangs*,\* **vattengång**, which on both sides were built in with boards had a *sluice*, **damluka**, which could be taken up and let fall again. These *sluice gates* were fastened with locks, that wanton people could not take them up, and lay the whole country near the river under water. The *flat land* which lay inside the earth walls was laid out either as meadows or pasture, or also in some places where it was a little higher, as ploughed fields. Here and there it was intersected with *runnels* and *dikes* to lead off the water, and drain the sour and low land. It was pleasant to go on this wall and see, that when the water in the river stood at its highest, the land and meadows, together with the ploughed fields immediately inside the wall, were much lower than the surface of the water in the river. It was also at high water a pleasure to see how great ships in the river were moving at a much higher level than the

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\* **Vattengang**, 'Watergang' is the word used in the old Ordinances. Thus, in the suit of Godfrey le Fauconer, *re* Romney Marsh, 43 Hen. III., 1259, Defdts. plead "that distress taken for repair of those banks and *Watergangs* was justly made." (Dugdale *Embanking and Draining*, 1652, c. xi., p. 21, Ed. 1772.) So also in *Ordinances* of John de Lovetot (p. 24), 1288; and, of the Thames, the *Ords.* of Henry de Apeldrefeld, 1290, respecting *inter alia* 'banks and *watergangs*' (*ib.* p. 27); and many other Ordinances in Dugdale. [J. L.]

land itself, which at a little distance made a pretty appearance. On the meadows inside the wall grew a beautiful grass. It sometimes happens that when there is an unusually high tide the water in some places breaks through these earth-walls, overflows the whole 'level,' **fälten**, or plain around, drowns cattle and other animals which go on the meadows, sweeps away the hay, and beyond this, does much other damage. There are, therefore, certain persons appointed, whose duty it is not only annually to examine whether the dam or earth-wall, **dammen eller mullvallen**, is in all places strong and properly maintained, and where it in any place needs repair, to cause that to be effected without delay, but they have also their assistants, who in short, daily walk along the wall, and look whether the water [T. I. p. 479] is beginning to damage the earth-wall in any place, so that the damage may be able to be prevented and cured in time.

The sides of the walls were almost everywhere covered with **qvickrot**, *Triticum*, 105 [T. repens] *Couch-grass*, *Quickens*, *Twitch*, or *Stroil*, which grew here very luxuriantly to 30, 36, or 42 inches high, and thick enough. In some places it was cut, in others left. Where it was cut, which was done by those who owned the meadows adjoining, it had begun to grow again very luxuriantly, and stood thick and green, so that this grass seems to be an excellent thing to fasten the sides of the earth-walls with, as I said before. No trees were planted on these walls except a few privets, **Ligustrer**, which had established themselves on the inner side. On top of the walls grew plenty of *Gramen Murinum* J. B. [*Hordeum murinum*, wild barley, wall-barley], but it was now mostly withered away. If these earth-walls did not exist, the river Thames would always look like a very large lake when the water in the river flooded the whole tract. In

one place and another a piece of land [called 'Salting' or 'Saltings'] has grown up outside the wall, which, when it is large, is often taken in within the walls by this means. A new wall is built outside it, and the old one inside is torn down; but this must be with the consent of those who have the direction of the walls.\*

**Nyttan af Flint-sten.** *The use of Flints.*

The whole country at this border, mostly consists of bare chalk, in amongst which is found a great number of flint-stones, both large and small. In the *Chalk pits, krit-groparna*, these flint stones are collected together from the chalk, laid in great heaps, and sold to strangers, who on the voyage from London often take a large quantity of them in passing. Here, in Gravesend, the streets were paved entirely with flints.

On the S.E. side, about an English mile from Gravesend, was a very ancient church,† which [T. I. p. 480] in short, was entirely built of bare flints, except that they had used *Portland* stone for the frames and arches around doors and windows,‡ and in some places § covered the tops of the walls with it. Some *Portland stone* was also here and there built into the walls.

**Tegel-bränneri.** *The brick-kiln* thus seems to have

\* The Commissioners of Sewers. [J. L.]

† St. Peter and St. Paul's Church (Rectory), Milton Parish. [J. L.]

‡ The tower has buttresses—nearly as much *Portland* stone as flint. At E. end P. S. predominates. Porch on S. side alternate regular courses. E. window, now perpendicular, 8 feet 6 inches wide—an insertion—has been originally 14 feet wide. There are two original two-light windows on N. side. Cruden gives (*Hist. of Gravesend*, p. 70) a view of one, and says there were six in 1843, and that the church was built between 1307 and 1377. [J. L.]

§ *Somligstads* cannot refer to the *stone battlements* which then existed. Irregular patches of stone are still seen along the top of the church wall (Aug. 4th, 1887). The battlements are shown in the Frontispiece to Pocock's *Hist. of Gravesend*, 1797, which gives a view of Milton Church from the S. West. [J. L.]

been little used in this country in ancient times, for in the whole of this church, from the very bottom at the ground to the top of the tower, not one single brick, **tegel-sten**, was seen. The roof of the church was of lead.\* The wall around the churchyard was built of flints for at least 6 feet, and only on the top covered with brick, which was laid so that it resembled a span-roof, **röst**, or roof of a house or church, in order that the water might run off quickly. A little S.E. of this church was an old church, † **et gammalt klöster**, of which the walls only were now standing. It was also similarly built mostly of bare flint, only that the frames and arches of the doors and windows were of Portland stone. Great trees now grew in the midst of this church.

**So Time changes all things!**

**Så ändrar tiden allt!**

In the same way a church at *Northfleet* ‡ (Northfleth) an English mile west of Gravesend in Kent, *Chadwell* church in Essex, and several other churches, were built from the ground up to the top of the tower of bare flint, except that the corners of the churches and towers together with the frames of the windows and doors were of Portland stone, and if there was any brick in these churches it could be very clearly seen that it had been inserted in later times to repair some dilapidation.

When they built a haystack in any of the chalk-pits, and the stacks here mostly consisted of *Sain Foin*, § they first laid at the bottom on the ground, one or two beds of thick flints, afterwards dry sticks thereupon

\* The old lead roof and the battlements were taken off in 1790, and the hideous new roof with dropping eaves erected. Pocock, *Hist.*, 1797, pp. 134 to 150. Cruden, *Hist. of Gravesend*, 1843. [J. L.]

† St. Mary's, Denton, 13th century. [J. L.]

‡ St. Botolph's Vicarage. [J. L.]

§ SAINFOIN. Kalm always always spells it St. Foin. [J. L.]

[T. I. p. 481] and then on the top the hay or Sain Foin, which was thereby prevented from taking harm from the moisture from the ground.

Near the chalk-pits several outhouse walls and garden walls were built entirely of flints, which were nearly always so placed in the wall, that after a large flint had been struck in half, the perfectly black and even, or fractured face was turned outwards; but the round and white side, which before was the outer surface of the stone was set inwards in the wall. In many places flints were carried out on to the roads for their repair.

*The 3rd July, 1748.*

**Âkrar.** *Ploughed Fields.*

The whole country around *Gravesend* was like a chain of hills on whose sides the *ploughed fields* lay.

They were middling large enclosures, **täppor**, mostly surrounded with a *hawthorn hedge*, or also sometimes with a fence of wattled twigs or small branches. I did not notice any *ditches*, **diken**, in the arable fields, and what is more, *no water-furrows*, **vattu-fârar**. The reasons may be that there are here no winters which cause the water to accumulate, the sloping position of the fields, and the soil, **jordmon**, which does not seem to retain the water long.

Wheat, **Hvete**; Barley, **Korn**; Oats, **Hafre**; Peas, **Ärter**; and Tares, **Viciæ**, were the plants which we found sown on those ploughed fields, which were not lying fallow, **som ej lågo i tråde**.

*The soil* was a clay of a very pale brick-colour blended with a fine sand. Some *pieces of flint* lay here and there; no other stones were found either on the ploughed fields, or in the whole of this district. The soil was so loose that it could be ploughed in the greatest drought, whenever they wished, without waiting for the moisture of the

second ploughing, **utan at vânta efter Snedmust**. When the ground was ploughed up the earth fell to pieces tolerably small, and was still further crushed to pieces with a large and heavy *oak-roller*, of 6 feet 6 inches long, and 18 inches or 2 feet diameter, and was harrowed, **harfvades**, still smaller, first with a large harrow, and afterwards with two smaller *harrowes*, **harfvor**.

After this it was rolled [T. I. p. 482] again so that the earth on the ploughed fields, **trädes-åkrarna**, lay now as fine and loose as a fine mould on a bed in a newly sown kitchen-garden. There were no **åker-renar**, 'acre-reins,'\* *i.e.*, *strips left unploughed*, except only an ells-breadth close to the hedges. The ploughed fields did not lie in **teg-skifte**, or 'lands,' originally *exchangeable strips*,† but entirely in severalty, **ensta-kade**. The same was the case with the meadows and pastures, each of which was separate from its neighbours.

**Hvetet**. The crop that was mostly sown here was wheat, which by itself made three or four times as much as barley and oats together. I saw no rye here.

Among the crops were found a great many weeds, among which *Papaver*, 428 [P. Rheas] *Cucubalus*, 360, [Silene inflata, *Bladder Champion*] and *Ranunculus*, 468, [R. bulbosus] were the most plentiful.

The luxuriance of the *Wheat*, the length of the straw, and of the ear, and the number of grains in each ear

\* REINS. *Studies in Nidderdale*, 1872, 8vo. (p. 60). "In N. a *Reean* is the strip that was formerly left unploughed around a ploughed field." For other "Reins," *ib.* p. 61. [J. L.]

† For the land-division in the common fields, see Col. A. H. Ouvry's *transl.* from the German of E. Nasse, "Agricultural Community of the Middle Ages," 1871, 8vo.; "Primitive Property," the Eng. *transl.* of Laveleye, 1878, 8vo.; and "The English Village Community," F. Seebohm, 1883, 8vo.; also "Studies in Nidderdale," 1872, 8vo. viii. "The Reins." [J. L.]

were nowhere greater than in well-cultivated fields here in Sweden. The same can also be said about *the Barley*.

**Ärtland.** *Pease-land* is found in many places. *The Peas* were sown in rows. The distance between two rows was sometimes 18 inches, sometimes 21 inches, sometimes 2 ft.

In the same manner, beans were also sown in rows. This was done partly because the weeds, which both smother and draw food from the peas, could then more easily be cleared away between the rows with a hoe, **hacka**; partly because one could then conveniently go and pluck the peas without trampling them down; for it is to be remarked that the Englishmen are very much given to eating green peas in the summer; besides that, those who live near *London*, or have the opportunity of sending green peas in the shell thither, sow a great quantity of peas for that purpose only, that they may turn an honest penny by selling them.

They had here cleaned away the weeds between the rows with a hoe, and drawn the loose mould up against the roots and stalks of the *pease plants*. The peas grow all the better for the soil being so friable and loose. No cut sticks, twigs, or anything else, were laid on the ground for the peas to creep upon and cling to, but they lay stretched out upon the bare earth.

[T. I. p. 483.] Here and there were hung up dead crows, **Krâkor**, of that sort which in the island are called *Rooks*, **Rokor** [*Corvus frugilegus*] thereby to strike terror into those of their relations who are left behind, more especially because this kind of bird is in England the greatest pest for the pease fields.\*

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\* Montagu says Rooks are "content with feeding on the insect tribe, particularly what is called the grub-worm, which is the *larvæ* of the chaffer [? cockchafer]. But in rendering the husbandman this piece of service, it pays itself by taking some of his corn also." (*Ornith. Dict.*, 1802, 8vo. [J. L.]

Sain Foin was the kind of hay with which they here mostly fed their horses, who eat it very willingly. It was given to them either whole with all the grasses and plants which were among it, or cut up very small, like fine chopped straw, and afterwards laid in the crib for the horses.

*The 4th July, 1748.*

**Tistels utrotande.** *The eradication of Thistles.*

Here we found that the farmers were more thoughtful than in Sweden; for in the last named place they allow the thistles, **Tistlarna**, to stand and ripen, when the wind afterwards carries about their fine seed on to all the near and distant fields, orchards, etc. Yes, who has not sometimes found them so thoughtless that when they cut rye or barley they cut away the crop round about the thistle but leave it standing,\* as though they were afraid that it would otherwise have no chance of sufficiently propagating itself! Here, in England, the farmers had entirely different ways of thinking and acting. We saw large tracts of ploughed fields, meadows or pastures where *Onopordum*, 653 [*O. Acanthium*, the *Cotton Thistle*] and other kinds of thistle which grew thereon had been mown with the scythe before they had well begun to expand their flowers, and left to lie and wither on the plain.

**Bohvete.** *Buckwheat* was sown in one and another of the enclosed arable fields.

*The 5th July, 1748.*

**Gödning.** *Manuring.*

In one place and another the manure, **gödselen**, was carried out and laid in great heaps on the ploughed fields, about 2 or 3 fathoms between two heaps. The manure consisted mostly of pieces of straw and such like stuff as

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\* "And lingering thistles the rough fields deformed." *Georgics*. Bk. I, l. 151, *orig.*—173, Tr. J. Mason, 1801. [J. L.]

is spread under the cattle in *the farm yard*. It lay still unspread. The field was [T. I. p. 484] quite fine-ploughed. In other places they had already carried out the manure on to the ploughed fields, spread it out, and ploughed it in. We afterwards remarked that these lands now manured were made into *Turnip land*, for on the 21st July following they were sown with *Turnip seed*, after the manure had previously been spread out, ploughed in, the land rolled, and the mould worked fine.

*Vicia Sativa*. TARES. Several places round Gravesend were sown with *Vicia Sativa Vulgaris, semine nigro*, C.B. which stood thick, luxuriant, and very beautiful. Its length was commonly 2 feet to 2 feet 3 inches. In some places a part of this was already cut and carried away for food for the farm-horses. It seems to be a plant which it is worth while to sow and cultivate.

*Fœniculum Vulgare Germanicum*, C.B. [Fennel], grew as well around London as here about *Gravesend*, and also in Essex, on the hills and chalk slopes.

### Bränsle. Fuel.

The fuel which they mostly used here in Gravesend was *Coal, Sten-kol*, which they could easily obtain from the *Colliers*, which daily passed close by the town when bound for London.

The Farmers, **Farmarne**, who dwelt in the country round Gravesend, and also on the other side of Essex, availed themselves most of such timber, **verke**, as they obtained annually when they cut down an old hedge and laid down a new, as before described (T. I. p. 319, *orig.*). I saw great heaps of such sticks and timber lying by the farmers' houses without reckoning what they sold, so it is worth while to have hedges.

In Essex I saw that poor people even collected a quantity of *Genista spinosa vulgaris*, Raj. Syn. 475 [*Ulex Europæus, Furze*] which they used instead of other wood.



En  
Resa

Til  
Sorra AMERICA,

På  
Kongl. Swenska Wetenskaps  
Academiens befallning,

Och  
Publici kostnad,

Förrättad

Af

PEHR KALM,

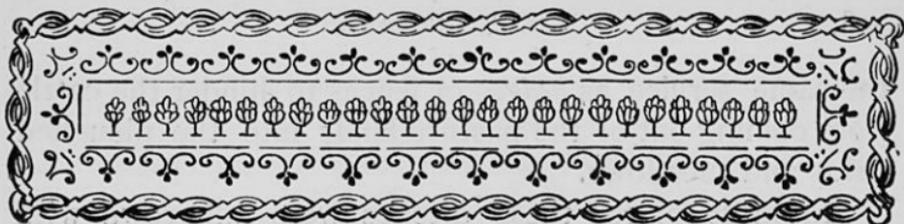
Oeconomizæ Professor i Åbo, samt Ledamot af  
Kongl. Swenska Wetenskaps-Academien.

Tom. II.

Med Kongl. Maj:ts Allernådigste Privilegio.

STOCKHOLM,  
Tryckt på LARS SALVIH kostnad, 1756.





## ESSEX OPPOSITE GRAVESEND.

[T. II. p. 1.] *The year 1748.*

*The 6th July.*

In the morning, in company with the then Pastor of the Swedish Congregation in London, Master *Tobias Biörck*, and an English gentleman, I crossed over the river Thames to *Essex*, to see the country there. Directly we were across the river there was about an English mile of quite lowland to walk over before we came up to where it began to be hilly.

This low-lying land has, in former times, been part of the river Thames, but is now, through the earth-walls and banks which are cast up on the banks of the river, separated from the same, and turned to account, and divided into arable fields, meadows, and pastures.

When it is *High Water* in the river, which happens twice in the twenty-four hours, the surface of the water commonly stands much higher than these lowland plains, so that if the aforesaid earth-walls did not exist, the water would then overflow the whole of them, and cause these great plains to resemble a vast lake.

The whole of this low-lying land was [T. II. p. 2] divided into different portions by deep *ditches* about a fathom wide, which was done to lead off the water and drain the land. Besides that, these *dikes* here performed

the same service as *hedges* or fences to hinder the cattle from coming out of the pasture-lands into the ploughed fields and meadows.

In most places these ditches were full-grown with *Reeds*, *Arundo Vulgaris Palustris*, C. B., which the cattle bit off as far as they could reach.

*Barley* was most properly sown on these lowland arable fields, and now stood very beautiful. The soil was clay, **Jordmon var lera**. A part of these arable fields was lying fallow.

They were now very busily engaged in mowing hay on the places which were laid down as meadows or grassland.

### **Gödning.** *Manuring.*

We found here in Essex, as well as all around Gravesend in Kent, that the cattle's dung was carried out and laid either by some ploughed field or some meadow where it was thrown together in great quadrangular heaps, yet not entirely by itself, but mixed in alternate layers with turf, thus to lie and ferment into a compact mass before it came to be used on the arable fields, meadows, or gardens.

At home at the farms we saw both in *Essex* and *Kent* the manure collected and treated in the same way as we have described before at Little Gaddesden (T. I. p. 251. *et seq. orig.*)

### **Krita.** *Chalk.*

Here and there on this side in Essex are also chalk hills of the same kind and shape as in Kent. We saw in one and another place that the chalk was carried out on to the fields, where it lay partly in, and partly spread out over, the ploughed portions of land to manure them with.

### **Hus.** *Houses.*

The husbandmen's houses, **Böndernas hus**, here in

Essex, were built partly of bare bricks, **tegel**, partly with cross-beams, **Korss-verke**, and bricks between, and partly they were of cross-beams with boards nailed over them, partly of cross-beams with laths thereon, which were plastered and daubed over with clay and lime. These last were only those which were inhabited by *peasants*, **torpare**, and other poor labouring people.

The houses of the farmers, **Farmernas eller Böndernas**, themselves were so well built that they might well be taken for beautiful gentlemen's houses, **Herregårdar**.

**Taken.** *The Roofs* were partly covered with tiles, partly with straw.

**Uthusen.** *The outhouses*, such as **lada**,\* the *lathe*, **loga**,† the *lodge*, &c., also the poor people's **stugor**,‡ *cottages*, were commonly thatched with straw, **täckte med halm**, in the manner before described at Little Gaddesden (T. I. p. 202 *orig.*). This *straw-thatch* was here made very high and very steep, so that the rain and wet could not stand thereupon, but ran quickly off, for which reason the thatch rotted less, and could consequently stand many more years than a flatter thatch. They were made also thick enough, viz., sometimes 1 foot and sometimes 18 inches thickness. The walls of some of the *lathes* were also of flint.

In some places they were now very busily engaged in thatching.

**Råg.** Rye was in Kent scarce enough, so that there were few places where any parcels of land appeared to

\* *Laith, Lathe, shed, O.N. Hlatha, Swed, Lada, Dan, Lade, a barn.* Gloss. to *Studies in Nidderdale.* [J. L.]

† *Lodge.* In Sussex, *an open shed* in a farmyard. [J. L.]

‡ *Stuge, 'stuggor hvári folket-bodde,' 'cottages in which the people lived.'* [J. L.]

be sown therewith, but in Essex on this border were nearly as many rye as wheat fields. It was now mostly fully ripe, and the straw began to be pale enough, while, on the other hand, the wheat which grew beside it was only just beginning to fill the ears or to set seed into grain, **at matas eller sätta kärna til korn**, and was quite green.

**Kyrkan.** The church [West Tilbury], which lies in Essex on a high bank exactly opposite Gravesend, seemed very old, and was almost entirely built of *Portland Stone*, which has been described above (T. I. p. 371 *orig.*)

[T. II. p. 4.] *Sain Foin.* On the hills lay several meadows which were grown only with *Sain Foin*, which was now cut, and lay in great cocks.

#### **Höstackar.** *Haystacks.*

The hay at the farms was also here set in such stacks as were before described at Little Gaddesden (T. I. p. 211 *orig.*), and were in shape like *barns* or houses. In the same way the hay is cut therefrom with a knife specially made for the purpose.

#### **Vattu-hoar.** *Water-troughs.*

At nearly all the farms, as in Kent, so here in Essex, they had water-troughs either to give horses the water out of, or also to keep the water in which they would use for cooking, which troughs were made partly of *Portland stone*, partly also of lead. The water kept very fresh therein.

Those of lead were commonly covered outside with boards, because the soft lead otherwise bent outwards or inwards, if anyone happened to strike against it.

**Handskära.** For cutting *Rye* and *Wheat* on this tract in Essex they do not use a *Scythe*, as at most places

in Sweden, but small *hand-shears*; in cutting *Barley* and *oats*, however, the *Scythe*, **Lja**,\* was used.

The iron of the *hand-shears* which they had, was crooked as in ours, but only about half as wide, so that it might so much the easier be able to be stuck in among the crop. On the under side they were not sharpened evenly along the edge, but they had small teeth filed with a fine file quite close together and running obliquely across the edge of the *shears*. There is no doubt that the straw must come off much faster, as well as remain steady when they are cutting it.

On the upper side it was ground quite even at the edge.

[T. II. p. 5.] **Lia**. The *Scythe* that was used here to mow grass with was very large and broad in the blade because it could not otherwise so easily overcome the resistance of the thick grass-growth which there is on a great part of the English meadows.

We measured a scythe whose blade was 3 feet 8 inches long, and  $2\frac{1}{2}$  inches wide. In the evening we returned to *Gravesend*.

[T. II. p. 23.] *Essex*, **midt mot Gravesend**.

The  $\frac{1}{2}$  July, 1748.

In the morning we crossed the river to *Essex* to see what there was to be seen.

**Âkrar**. On the lowland places, near the river Thames, some of the arable fields were now lying fallow. They were ploughed quite flat, but full of water-furrows lengthwise, about 10 feet between two furrows. *The soil* was a *grey clay*, **Jordmon var en grâ lera**. Some small *Pebblestones* appeared here and there. In some

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\* The large scythe used in Yorkshire and the north is still called the 'lea.' [J. L.]

places were large plots sown with *Beans*, which seemed to thrive here better than in any place I saw in England. They were sown with open hand, and not in rows.

In several places was sown *Wheat*, which was standing beautiful. The ploughed fields were there arranged in small 'ryggs,'\* **ryggar**, or ridges, 4 feet wide each, the ryggs low enough, no *reins* out on the ploughed plots. But of all crops, *barley*, **gumrik** [*Hordeum Hexastichum*, LINN. 'Kegle Korn,' LILJA, *Skånes Flora*, 1869, I. 46], was here the most plentiful, and now stood beautiful and flourishing; the stalk's length 2 feet 6 inches to 3 feet; two or more plants from one root, in the greater number of ears twenty-seven opposite couples of grains. The ploughed fields lay in *Broad-land*, about 20 feet between the water-furrows.

All these arable fields, meadows, and pastures were separated from each other by dikes, **diken**, so that here also each farmer had his own land separated from his neighbour's, [T. II. p. 24] that he was able to look after and keep it as he best would and could.

#### Hafre. Oats.

We saw at several places in Essex large arable fields which were entirely sown with *white oats*, **hvit hafre**. Of other kinds of oats we found none.

The ploughed fields at this edge of the county were richer in soil, **svartmylla**,† than around Gravesend in Kent. The sub-soil, **jordmon**, was brick-coloured. Very many small *Pebble-stones*, and other small *fragments of flint*, lay on a great part of the arable fields in *Essex*. On some,

\* RYGGS. "Corn riggs are bonnie."—BURNS. [J. L.]

† 'Svartmyllan, eller den jorden, som på åkrarna låg öfverst.' (T. I. p. 204.) 'The earth which lay highest on the fields,' the *top soil*; *lit.* black earth. [J. L.]

however, there was very little thereof. The principal reason why, in *Essex* as well as in *Kent*, they sow a large quantity of oats is that they fodder horses therewith.

**Gårdar : Hus.** *Farms : Houses.*

While we were walking about in Essex to-day we got to see a great many *Farm houses*, Farmers **gårdar**, which here had the same appearance as in the other places in England where we had been, viz., that they resembled gentlemen's houses more than farmers' houses, **at de liknade Herregårdar mera än bondgårdar**. The houses which the farmers themselves dwelt in were mostly of brick, **tegel**, commonly two stories high, roofed mostly with tiles, yet there were also a great many that were content with thatch, which is here made steep and thick.

The *Day-labourers*, **Dagsverks-karlar**, who mostly are the same as **Torpäre** with us in Sweden, had, in some places, houses whose walls consisted of cross beams with oak boards nailed on the outside.

Brick houses were on the outside washed with lime, and white. Close to the *farm-house* was always the *lodge* and the *barn*, **Logen och Ladan**, which were commonly made in the same way as in Upland in Sweden [T. II. p. 25], viz., all under one roof, the lodge in the middle, and lathes on both sides, without any walls or divisions between them. Both the lathes were without floor, **golf**; but the lodge had a floor of boards to *thrash* upon, which *floor* was mostly laid on the bare ground. The lodge had large doors on both sides, that they could on one side drive in with a whole load of corn and unload in the lodge, and afterwards drive out on the other side. The whole barn, both the lodge and the lathes, had walls of cross-beams with oak boards nailed horizontally on the outside, and a high and steep *thatch-roof* covered with straw 1 foot

to 18 inches thick. Beside the lodge, or also sometimes in front of it, they had a little *Skeeling* or *shelter*, **skjul**,\* which stood on *posts*, with straw-thatch over it, at times with walls of flakes or wattles,† made of interwoven thin boughs, in which *skeeling* they kept their ploughs and other agricultural implements. Commonly also they had a similar *skeeling* for their *wagons* and conveyances. Against and up the cottage walls were often planted vines which covered the whole wall.

No *hay-lathes*, **hölador**, were used either at the farm or out in the meadows, but the hay was all stacked.

**Krita.** Those who lived here told us, that here and there on the banks of the Thames in Essex are *Chalk pits* ‡ where they get *chalk*, but that this chalk is not so good as that which is dug in Kent. We saw that in some places they carried out the chalk on to the fallow fields, **på trädets-åkrarna**, which mostly here lay on the hill, and that they shot the chalk there in heaps, where it was yet either unspread or also already outspread, and partly even ploughed in. [T. II. p. 26.] I asked if they used much here to manure the fields with, and how much use it was? They answered that they used it enough for manuring the fields, that it is especially good on cold ground, that when they have once manured a field with it seven and more years may pass before they manure it anew; that they had found it many times better first to burn the chalk to lime and then to carry the lime itself

\* 'SKEELING. The bay of a barn. The inner part of a house or barn where the slope of the roof comes.' Cooper *Suss. Gloss.* 2 Ed., 1853, p. 75.  
 SKILLING. 'A place called a S., which is what they lay turf up in.' *Chichester Smugglers*, 7th Ed., 1749, p. 14. 'A *Skilling* or outhouse adjoining to the house, wherein lumber and fuel was kept.' *Ib.* p. 41.  
 [J. L.]

† FLAKES. Tall *wattles*, in Sussex called *Flakes*, still manufactured 1886, in Clapham Woods. [J. L.]

‡ Chalk-pits, e.g. Purfleet and Grays. [J. L.]

out on to the fields, but that this is much more costly. We saw here and there on the ploughed fields which lay on the low-lying plain near the Thames, that they had been manured with chalk.

### Råg. Rye.

We noticed in the course of the day several large rye-fields in Essex, which were now standing very luxuriant. I asked the people if they were in the habit of baking bread of this crop, or why they sow it? They answered that no others but poor people use it for bread; but the principal reason why they sow it is that they carry it to London where they sell it to merchants, who ship great quantities of it abroad, to be there sold.

The soil here in *Essex*, which on this edge of the county is very dry, sandy enough, and full of '*Pebblestone*,' seems almost to be more suitable for rye than for wheat. On the sandy fields the rye stalks were 4 feet long; the length of most ears 4 to 5 inches.

The beautiful and luxuriant rye was all sown in 20 feet wide *Broadland*.

**Trappor.** *The steps* which we availed ourselves of, to mount our horses, and which have been described before (T. I. p. 297 *orig.*) were here at almost all the farms. [T. II. p. 27.] They had also similar ones in Kent almost everywhere. The women had in them the greatest convenience for mounting their horses.

### Gödsel-stackar. Manure-heaps.

In the same way as has been before mentioned (T. I. pp. 251, 252 *orig.*) about manure, that it is laid in heaps to rot, we also saw to-day near every farmer's house, as well as often out by the fields, that the manure which is collected *in the farmyard*, was cast together in great four-cornered heaps to ferment, or rot through into a compact mass.

**täppa**, on the hills which was sown with *Sain Foin* only, which, however, was now cut and carried. Those who lived in this district told us that they do not sow nearly as much *Sain Foin* in Essex as in Kent, because it will not thrive there so well as in the last named district. Can this be because\* in *Kent* there are more chalk-hills and chalk-valleys, **kritbärg och kritbotten**, than in Essex? Besides this, we saw also here and there enclosures of only *clover*, which also was now cut and carried. *Sheep*, **Fären**, were also already turned in thither to feed on the *stubs*.

**Bohvete.** *Buckwheat.* Here and there appeared large fields which were cropped only with *Buckwheat*. I certainly never saw it more beautiful than here. It stood now in full flower; but had not yet set seed. The soil was a dry *sandy soil*, **torr sandmylla**, full of small *pebblestones*.

[T. II. p. 30]. **Âkrar.** In all the *arable fields* which lay here on the hills, there was not a single ditch; nor were there any 'acre-reins' except along the sides of the hedges; but these were so narrow, that no one could go off them without necessarily going onto the ploughed part. Each farmer had his arable fields, meadows, and pastures divided off for himself without having to do with others. Some enclosures were here sown with wheat, others with *Rye*, others with *Barley*, **Gumrik**, others with *White Oats*, others with *Peas*, others were lying fallow.

I did not notice anywhere on these hills that *Beans* were ever sown except near the farms.

The fallow fields were very well cared for, and the *mould* on them was quite fine.

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\* Yes. Sainfoin is largely cultivated on the Chalk, especially on Slopes, where there is nothing but chalk soil proper. [J. L.]

On some *Chalk*, **Krita**, lay spread out, in other places was *manure*, carried out and shot in heaps still unspread. On the slope of a hill the fallow fields were arranged in *stitches*, **ryggar**, 2 feet wide and 1 foot high, so as to make it easier to eradicate the weeds by means of ploughing, **körning**.\*

### Ormbunkar. *Brackens, Brakes.*

*Pteris*, the *Bracken*, 843 [*Pteris Aquilina*], had the same bad habit, **oart**, here, as in Sweden, that when they have once begun to grow in a field they are afterwards difficult to eradicate.† I saw to-day in several places that it grew as well out in the fallow fields as amongst the *Rye*, luxuriantly and in great abundance.

### Ärter. *Pease.*

We saw in different places large *Pease-fields*. The peas seemed to be flourishing. They were not sown with the drill or in rows, but with full hand, as is common with us. No sticks [T. II. p. 31] or branches, or such like, were found under them, but they lay on the bare ground. The pods were already tolerably ripe. I opened some, but found in everyone an astonishing number of small maggots, **maskar**, and, as it seemed, not all of one sort. I reckoned over 170 maggots in one pod. In the most matured pods the most maggots were found, but in those

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\***Körning**, *Ploughing*. *Köra* is to drive, e.g., the plough. Not to be confounded with the English provincial word, 'Kerning,' from 'Kern,' a grain, or corn. "*Kerning ground* is that which, drest well, will produce a great quantity of corn, as gravel does, when others will run more into straw, and less corn." Will. Ellis. *Practical Farmer*, 4th Ed. 1742, 8vo. p. 169. [J. L.]

† To eradicate *Brackens*. In Abkhaziya the bracken "grows in one month to a greater height than a man on horseback. If they mow the fern for three years in succession in the spring, when the scythe can still take hold of it, then the plant perishes." From the Russian of Vladikin's "Kavkaziya," Moscow, 1874. 8vo. [J. L.]

which were little matured few were seen, and in most cases none. Some of the fully ripened pods, however, were also free from maggots.

On one other *Pease-field* where the *Peas* were still very little matured, we could not find any maggots in the pods. It may possibly happen that the insects, which had been the origin of the many maggots just described, had already closed their short life and were dead when these later peas began to flower, and they thus escaped this *vermin*. Lucky is he who so can sow his seed that the insects, which use to cause this damage in the fields and the country, come either too early or too late.

In the evening we returned home to Gravesend.

#### GRAVESEND.

[T. II. p. 5.] **Mjölakens Ansning, &c.** *The Dairy.*

Here in *Kent* the farmers or husbandmen keep only a few *cows*, so that they have not any more milk than they require for their own households. When the milk is newly milked, they *sile*\* it in four-cornered boxes of lead. The length of such a milk-box, **mjök-låda**, is about 2 feet to 2 feet 6 inches. Sometimes they are of the same length and breadth, the depth about 4 inches. When this box is siled in the morning nearly full of milk, it is left to stand so for twenty-four hours, or till the next morning, when the cream is skimmed off, **då gråden skumas af**, but the remaining *sour milk* is used either for the people, or, as mostly happens, it is given to the swine.

In the same way, the milk that is siled one evening is skimmed the next, so that in the summer they never leave it to stand longer in the box than twenty-four hours,

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*Sile*, a milk strainer. *Sile*, v. *to strain*, as fresh milk from the cow, v. n. to *sile down*, to fall to the bottom, or subside. North. & Lincoln; Grose, Prov. Gloss. [J. L.]

but in the winter they allow it to stand for thirty-six hours, so that of the milk that is siled in the morning the cream is not taken off before the evening of the next day. From this cream *butter* is afterwards churned.

I related to the English women how long we in Sweden let the milk stand before we take the 'curds,' **filet**, off it, when they answered that we could not in this way make such [T. II. p. 6] good butter as they. For they said they had proved that when one churns butter of such a cream as is taken off so sour a milk, the butter, has not one-half of the delicious and agreeable flavour, **smacken**, that the English generally has. A butter churned from so very thick a milk they here called **girughets Smör**, 'rank butter,' *lit.* 'butter of avarice.'

They believed also that as much butter can be made of *sweet cream* as of *sour*. They never let the milk stand here in England so long that it becomes like our **filbunkar** [flat wooden dishes of curdled milk] with so thick cream and milk. Moreover, they do not know here what a **filbunka** is. They said that they use leaden vessels to sile the milk in, because in summer it keeps fresher therein. I asked if they did not use *wooden vessels* to sile milk in? They answered, 'no,' because an acid settles in the wood and corrupts the milk, which acid they cannot so easily wash away.

The leaden vessels are well washed with warm water every time they are used, so that not the least milk or acid therefrom is left in them, because it would corrupt the cream and consequently the butter.

Very little or no *cheese*, **ost**, is made in this part of *Kent*.

In *Essex* they have a large number of *cows* and *cattle*. **Kärnan**. The *Churn*\* which they use is a tun lying

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\* The Churn is still called Kern in Yorkshire. [J. L.]

horizontally upon a frame, larger or smaller according to the quantity of milk they have for it, and has narrow boards set inside lengthwise, full of holes to work the cream more. This Churn is turned round with a winch-handle.

*The 7th July, 1748.*

**Gäss.** *Geese.* The story was related to me to-day by those who said they themselves had seen it, that in *Lincolnshire* [T. II. p. 7] and in other places in England, once a year, viz., in the summer-time, nearly *all the feathers and down are plucked off living geese*, which after a time again get new down and feathers in the place of the old ones; although they will look disfigured enough at first, when they are newly plucked. Those who have this custom with their geese pretend that the down and feathers which are plucked off the goose whilst it is living will have the property that when they are laid in a bolster and anyone lies upon it so that they become crammed together, as soon as one gets out of bed, they will immediately spring up again and expand themselves to the same height as before, so that it will be scarcely observable whether anyone has lain in the bed. Such elasticity will this down have! At least there will be a very great distinction in this respect between those which have been plucked from a goose while he was alive, and after he is dead. Here in *Kent*, as in *Essex*, there are geese enough bred by the *farmers*; likewise *ducks*,  
**Anckor.**

**At få Kalf-Kött hvitt.** *To make Veal white.*

Here in England, the county of *Essex* is particularly noted before other counties for its *Calves*, which have a very excellent, fat, very tender, and very white flesh. And that it may become so much the whiter, I saw during my visit to *Woodford*, that the Farmers, or rustics,

used to lay a great piece of chalk in a trough where they had their *fatted calves*, that the calves might lick it, which in their opinion will have the effect of making the flesh become whiter.

But besides this way, there was to-day related to me another trick, viz.:—If they slaughter a calf, say, at six o'clock in the evening, in the usual way, then they stick him in the neck, and let the blood run so nearly out of him that he is [T. II. p. 8] almost dead. When they see that no great quantity of blood is left, they stop the blood so that it can run no more, and that the calf comes round somewhat; then let him so live till the morning of the following day, when they always slaughter him. A calf slaughtered in this way is said to have much whiter flesh than if they had slaughtered him in the ordinary way, and killed him all at once.

The learned Dr. Lister also gives an account of this in his *Journey to Paris*, p.m. 157.

### Smör. Butter.

In Canterbury, in Kent, butter is not sold by the pound or by weight, as is the custom everywhere else in England,\* but it is made rectangular and flat as a board, and is sold by the yard,† **efter alntal**. The butter in

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\* This is not quite accurate. In Plot's *Nat. Hist. of Staffordshire*, 1686, c. III., p. 108, 3:—"Limestone Hills. . . . The butter they buy by the pot, of a long cylindrical form, made at Burslem in this county, of a certain size, so as not to weigh above 6 lbs. at most, and yet to contain at least 14 lbs. of butter, according to an *Act of Parliament* made about 14 or 16 years agoe." There was a Surveyor appointed in consequence of the "tricks and cheats" practised, whose duty it was to probe the butter-pots with a long "butter-boare" to see if they were packed full, "so that they weigh none (which would be an endless business), or very seldom." The *Act of Parliament* referred to was passed in 1674, 14 Chas. II., c. 26, "Packing of butter." *Repealed* 36 Geo. III., c. 86, s. 19, 1796. [J. L.]

† In Mexico and California "jerked beef is sold by the *vara* or *yard*, as *butter* is sold at Cambridge in England."—Flack, *Prairie Hunter*, p. 88.

Essex is said to be a good deal better and nicer-flavoured than that which is made in Kent, at least better than that which is to be had around Gravesend.

**Krita til husväggar.** *Chalk in house walls.*

At a farm, **en by**, which lies not far from one of the chalk pits, we saw an outhouse whose walls were entirely [T. II. p. 9] built of chalk, which they had cut into quadrangular pieces. It was only at the corners of the house, and at the doors and the window openings that they had built with *brick*. One and another of these *chalk bricks*, **Kritstenar**, if I may so call them, was partly injured by the air, and was beginning to fall to pieces; but most of them were flat and uninjured. The house seemed to have stood from 8 to 12 years.

*Hedera*. Ivy. At several Farms *Hedera arborea*, C.B. [H. Helix] grew close against the walls, up which it clambered, and often entirely covered long walls, which, in consequence, looked very pretty. In like manner it clad in many places walls around churches, houses, and gardens. The walls of the before mentioned old church [Denton Church] were for a great part overdrawn with ivy.

**Vinranckor.** *Vines.*

At very many houses in *Gravesend*, and at a great many of the *Farmers'* and other houses, rich as well as poor, round about the country, they had planted *vines* on the sides of the houses and cottages which looked towards the south, **mot solen**,\* and whose walls at this time of the year were almost covered with them.

**Kersbärsträn.** *Cherry trees.*

Kent is the district that has the name for this, that

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\* "Turn not your vineyard to the setting sun." *Georgics* II., 298, *orig.* 331, Tr. Mason, 1810, 8vo. [J. L.]

therein grow not only the best and finest flavoured *Cherries*, **Kersbär**, in England, but also, if anyone will give credit to their account, in the whole world. Which-ever way one goes out of *Gravesend*, as well as farther out in the country, one sees almost everywhere near the farms, large fields and orchards, **parcker**, planted only with *Cherry trees*. In other places are found large orchards of *Apples* [T. II. p. 10] and *Pears*, **Äplen och Pärön**, either planted separately by themselves or also mixed with *Cherry trees*. The *Cherry trees* are planted *ordine quincunciali*.\* The ground, **Marken**, under them lies in some places entirely in grass, **i linda**, and is used either as meadow or pasture.

On the south side of *Northfleet* Church was a large orchard of *Cherry trees*. The earth between the *Cherry trees* was ploughed up, made fine, and sown with wheat, which was now standing there as luxuriant and flourishing as at any place I saw on this country side. From the cultivated appearance of the soil it seemed as though they had long availed themselves of this land for ploughing. Several *Apple trees* were also planted here. The *Cherry trees* were now full of fruit, **bär**. The soil had apparently been well cared for, because it was not noticeable that the trees made the wheat thinner or poorer immediately under them.

When I was over in that part of Essex which lies immediately opposite *Gravesend*, I remarked that almost everywhere where I wandered about I scarcely ever got to see any *Cherry trees*, much less any whole orchard of them, and not nearly so many as around *Gravesend*, in Kent. This caused me to ask the people in the villages

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\* *Quincunx*. Adam, *Roman Antiquities* [1791, 2nd ed., 1792], in the 9th ed., 1822, p. 364, figures this *two deep*, that is to five parallel rows wide.

the reason why they did not endeavour to plant here as many Cherry trees as in Kent, which lies close beside them, only that the river Thames divides them? They answered that it could not well be done, because the *Cherries in Essex* never attain the same agreeable flavour as in *Kent*. Another said that because the soil in Essex is *Gravel, grus, Cherry trees* will not thrive there, **ville ej kersbärs träden der fort**; on the other hand, *Pear trees* flourish there well.

Between *Gravesend* and *Rochester* I also saw [T. II., p. 11] a great number of *Cherry orchards* on both sides of the road, especially towards the *Gravesend* side. The Cherry trees were here planted not *ordine quincunciali*, but all in squares. The distance between two trees was 4 feet. The ground between and under the trees was entirely used up as arable, or also sown with *Sain Foin, Clover, or Tares, Vicia Vulgaris Sativa*, J. B. [Johann Bauhin]. To use these orchards also as ploughed fields seemed, however, to have something incongruous in it, for since the fruit ripened some weeks before the wheat, they were obliged, when they wished to have the use of the fruit, in many places round and under the trees, as well as between them, to trample down the wheat or the crop sown, which we saw happened to all *Wheat*, as well as *Barley* and *Oats*. But where the orchards were sown with *Clover, Sain Foin, and Tares (Vicia)*, it was not incongruous, because these kinds of hay were commonly cut and stocked before the fruit was fully ripe. The English fruit-growers, **Trägårds mästare**, maintain that the fruit trees thrive best and bear the most abundant and best flavoured fruit when the soil under and between the trees is kept cultivated, **hålles brukad**, and loose, like a ploughed field, without any crops, grasses, or weeds being allowed to grow thereon. They had shot and hung hosts of dead Jackdaws, **Kajor, Rooks, Råkor**,

*Crows*, **Krâkor**, *Magpies*, **Skator**, &c., up in the branches of the trees to frighten away their comrades from coming thither either to scathe the trees or the crops. From these suspended, half-rotted, and stinking birds it was not difficult to know at a distance when some cherry orchard was in the neighbourhood. All through this time of the year whole boatloads of cherries of many sorts are carried from Gravesend\* to London.

[T. II., p. 12.] *The 8th July, 1748.*

**Âkrar**. Many of the *arable fields* which were lying fallow were so full of *quickens*, **qvickrot**, 105, that it was esteemed a pity. I never saw any *ditch* in all the *arable fields* which were in the neighbourhood around Gravesend, or thereabouts, no *water-furrows*, no *acre-reins*. The lowest places were commonly sown with *Barley*, **Gumrik**, which commonly had 12 to 13 grains in each row.

The colour of the soil also in among the *ploughed fields* was a flesh colour; the mould very loose, with enough small round and flat flintstones and bits of chalk among it. In some places it could be plainly seen that *ditches* were needed, because the water had stood there and formed boggy ground, **stannat och syrts**, so that the wheat was very thin. In many places the fallow fields had not yet been ploughed since the crop reaped on them was carried, but they lay entirely overgrown with weeds.

**Vau.**† 439 *Dyers' Weed*, *Weld*. [*Reseda Luteola*]

\* The Cherry orchards have long disappeared from the neighbourhood of Gravesend. 1890. [J. L.]

†VAU. *Dan.* Vau, Vouvre; *Ger.* Wau.—Müller *Dan. Deuts. Wörterb.* 1800; *Dut.* Wouw; *Eng.* 'Weld, a kind of herb whose stalk and root is in great use for dyeing the bright and yellow lemon colour.'—Bailey, *Eng. Dic.* 1730. 15th Ed. 1753; *Fr.* Gaude. *Botan.* *Reseda Luteola*, *Dyer's Weed*. '*Reseda Lut.* yields 'Weld' a yellow dye.'—Hooker *Stud. Flor.* 870. p. 41.

which is cultivated for its yellow colour, was in several places drawn up root and all, bound in small sheaves, **Kärfvar**, which were set one against another in the fields to dry, in the same way as we do with *Hemp* and *Flax*. Its seeds were still not much more than half ripe. It grew here wild, in places abundantly, in other places it was expressly planted.

The 9th July, 1748.

**Ängar.** The low places in Kent which at high water lay below the level of the water in the river Thames, were divided into meadows and pastures. . . . . [T. II. p. 13.] . . . . . No trees grew on these lowland meadows, but instead of hedges or other fences around them, there were deep dikes about a fathom wide, which now stood nearly full of water.

*Arundo Vulgaris Palustris* J.B., the *Reed* [*Phragmites communis*] and *Scirpus* 39 [*S. Maritimus*] or the *Sea-rush*, **hafssäv**, grew in the greatest abundance in these dikes and were considered very good fodder.

The *kinds of grass* of which the plants on these meadows principally consisted, were *Alopecurus culmo erecto* 52. [*A pratensis*], *Gramen Secalinum pratense elatius* (Morison) [*Hordeum Secalinum*] and *Aira* 67 *syn. Gramen lanatum* (Dalech) [*Holcus Mollis*].

These here formed the finest, thickest, and most luxuriant grass sward that anyone could wish to have on his meadow. It was now being mown here with all diligence. The pastures were divided into many parts, so that when the cattle went for one week on one pasture, the grass was growing in two or three others, where the cattle had been before: and when the cattle had been here one week, they were moved to the pasture which at the last change had been longest free from their bait.

Hence it happened to a certain extent that the grass grew between the cattle's feet!

In every pasture was commonly a little pond with sloping sides or banks, on one side of the field, that the cattle might get their water: because the banks of the dikes were designedly made so steep that they could not get at the water to drink therefrom.

On the meadows there is not the least sign of moss found, because the thick and luxuriant grass prevents such.

[T. II. p. 14.] In most places the meadows were smooth and flat without any hillocks, **tufva**, but in some places, especially higher up against the ploughed fields, were hillock, **tufvor**, enough, but small. In one and all of them which we dug asunder, was found a multitude of small yellow ants, **myror**. In several places where they had newly and to-day mown hay, we found loose mould in small hillocks, newly, and probably only this week constructed, and resembling a *mole-hill*, **mullvadshög**, but when this mould was scattered, it was found full of the before-named ants. Thus have they heaved up these hillocks, **tufvor**. But we also had the opportunity of discovering another cause for these hillocks in this situation, which was *Funcus acutus panicula sparsa*, C. B. [J. Tenax Banks. MS.] This grew in many places in very great abundance, and had the peculiarity of always growing in *tufts* or *tussocks*, **tufvor**. It is not destroyed by any animal on account of its hardness and roughness or bristling exterior; it takes hold of dust, **damb**, straw, **strå**, and anything that is driven by the wind. Directly this begins to grow on the smoothest ground it makes it in a few years full of hillocks, **tufvor**.

**Gödslens förmerande.** *A mode of increasing the quantity of manure.*

*The soil, which is dug up when the before-named dikes*

are made was after some time carried home by the farmers, where it was laid in the farm yards, alternately with the *cattle-dung*, in heaps, to lie there and ferment together with the same, which thus made a choice manure.

The <sup>[Julian]</sup><sub>[Gregorian]</sub>  $\frac{9}{20}$  July, 1748.\*

### Gärdesgårdar. Fences.

In some places only we saw *fences*, which were made mostly of small sprays, **språtar**, which wattled fences are, in some parts of the country, very much used. They are made in this way [T. II. p. 15] that, instead of placing, as we do, two staves side by side, there is only one set by itself, which generally is not longer than the height of the *fence*. Between two staves there is a distance of about 2 feet. Instead of 'edder,' **Gärdsel**, small *branches* or *twigs* of trees are used, which are bent alternately in curves about the staves in this way, that when the one *staff* has been left on the left side of the horizontally placed *runners*, **språten**, the next staff comes to be on the right side of the same, and so on.

*Serratula*. Foliis dentatis Spinosis, 662, or **Åker-tistel**, [*S. Arvensis*, L., afterwards *Cnicus arvensis* L. now *Cissium* (Tournefort) *arvensis*] grew in many places in the greatest profusion in the loose mould on the walls. In some places it was cut down, that it could not get the chance of ripening and seeding, and so doing injury to the neighbouring ploughed fields and kitchen-gardens.

In other places they had the mischievous practice, common in Sweden, of leaving the *thistle* untouched, by which it was much more easily enabled to spread itself all

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\* This is the first appearance in this work of the double or alternative date contemplating the difference of eleven days between the Old and New Style.—[J. L.]

around, and become injurious to the crops sown, and also to the kitchen garden plants.

### Vägar. Roads.

Almost everywhere on both sides of the high roads, were hawthorn hedges planted, so that one walked or travelled here as in an *Allée*, or in a garden.

These high roads had not the character, as with us in Sweden, that the road lay higher than the land around, but here exactly the opposite is the case—viz., so that the road goes in most places deep down in the earth, to a depth of 2, 4, or 6 feet, so that many would believe the road was only some dry stream-course. There is commonly on one side of the road [T. II. p. 16], if not on both sides, on the walls or the high sides, a footpath, **gångväg**, on which those who travel on foot go, so that they are not in danger from those who drive or ride.

That *the roads* are so deep seems to come from this, that in this country very large wagons, **vagnar**, are used with many horses in front, on which wagons a very heavy load is laid. Through many years' driving, **körning**, these wagons seem to have eaten down into the ground, and made the road so deep. On the other hand, the hedges which are planted on both sides of the road had increased their mould, partly from dust which had been fixed by them, partly from the leaves which they let fall yearly, partly from the earth which is shovelled up like a little wall against the roots when the hedge is made or laid down. But the principal cause, nevertheless, seems to be due to the wagons, because the arable-fields, pastures, and meadows on the sides equally in most places lie higher than the road. *The soil*, **jordmon**, which here consists of *sandy gravel* and *pebbles*, **sandgrus och klapper**, and which immediately absorbs water, causes these roads to suffer little injury from rain. During heavy rain some

water runs along these roads, but it does not last long, and, moreover, running water outside the river Thames is here very scarce.

*The  $\frac{10}{21}$  July, 1748.*

**Bönor.** *Beans.* On whichever side I went out round *Gravesend* in *Kent*, I always got to see on every farm, Farmer's **gård**, some large beanfield. In some places were whole large arable fields and tracts sown with beans only. It was commonly the sort which has small and narrow pods.

In all the places I saw them, they were sown in rows. The distance or width between two rows [T. II. p. 17] was uncertain, sometimes it was as much as 2 feet 6 inches, sometimes less, even to only 6 inches—which, however, seemed too thick. It was not too much when just 1 foot width was left between the rows.

The distance between each *Bean-plant*, **Bön-stånd**, and the next in the row was however not the same throughout, but just as if they had been in a hurry when they sowed them. I saw them stand one foot from each other; sometimes, however, they had scarcely more than an inch breadth between them. They commonly stood six inches from each other, which space they certainly required, if not a little more. The reason why the Beans were sown in rows was partly that they could get at them so much the more readily to clean away the weeds between them with a hoe, as well as afterwards the better to be able to pluck off their green pods, which they send to London to be sold; partly that by casting up the mould to the stalks they furthered the growth of the Beans.

After the stalk had attained some length, the top was cut off that it might shoot no more in length, but turn all its strength on the maturing of the Beans. They

were sown at different times, whence it happened that when some plots exhibited ripe beans, in other places they were just beginning to strike out into flowers. The principal reason why there are so many beans sown here is that they feed horses and pigs with them in the winter.

The  $\frac{11}{2}$  July, 1748.

**Svartmyllans tjocklek.** *Thickness of the soil.*

Near one of the chalk-pits, **krit-groparna**, was an orchard, **trägård**, which consisted partly of [T. II. p. 18] *cherries* and partly of *Walnut-trees*. Here, on one side of the Chalk-pit, they had taken away all the *soil* or *vegetable-earth* **svartmyllan eller matjorden**, which lay upon the chalk. This soil, **matjord**, was not black, but rather more of a flesh-colour. The thickness of the soil **svart-myllan eller matjorden**, was here mostly 21 inches, in some places 27 inches, in other places 18 inches and thereabout. The upper surface of the chalk was however, not horizontal, but went more like waves.

**At göra Vin af Russin.** *To make Wine of Raisins.*

My landlady where I had my quarters here in Gravesend, had Wine which she herself had made from Raisins, which was so good that those who wish to be thought to be judges of wines had difficulty in distinguishing it from *Madeira* Wine.

The Receipt was given me, how it is made, which was thus :—

To 100 lbs. of Smyrna Raisins are added 45 to 50 pints of water, which is afterwards stirred twice a day, for a period of fourteen or sixteen days.

Thereupon, the raisins are well pressed, and the Wine,

or the expressed juice of the Raisins, is poured into a barrel, **ankare**, which holds about 30 pints, **kannor**. Afterwards a piece of brown paper is taken and stuck full of holes, and laid over the bung-hole, **sprund hålet**. Some of the wine, or the expressed juice, must be preserved in an open vessel to fill up the barrel, according as it works itself out, or ferments over. It must so stand till the whole of it again begins to ferment. Thereupon three *quarts* of well distilled Brandy, are added, with one pound of the best sugar, the white [T. II. p. 19] of sixteen eggs, and one ounce of alum, which has been boiled in one quart of water. All this is mixed well together, and laid in the barrel, which is well shaken about, bunged, and left to stand so for one year before it is tapped.

On the foregoing it is to be remarked: 1st. That when one begins to blend the Raisins and water together, the water is thrown into a tub, **kar**, or vat, **vatten-så**, which ought to be very clean.

While they are both being agitated together in the same vessel, **käril**, the vessel is covered over with cloths, that earth and such like may not get into it.

2ndly. The sugar and white of egg are whipped before the alum is put in, for if you were to put the alum in at the same time, it would cause the egg to coagulate. The water in which the alum is boiled ought, moreover, to stand till it is cool, before it is thrown into the sugar and egg.

**At göra et svagare vin.** *To make a milder wine.*

After you have made a strong wine in the foregoing manner, pour anew twenty pints of water on the pressed out raisins, and let it stand one week, after which it is pressed out from the raisins, and is poured into a fifteen-pint barrel; and when it has done fermenting there are put therein half as much Spirit of Wine, Sugar,

White of Egg, and Alum, as in the former. After three weeks' time, it may be ready to be tapped. This weak wine will not keep long, but after it is tapped and bottled, it must be drunk at once. The stronger wine becomes better and more agreeable, the longer it afterwards stands untouched, and that for many years.

[T. II. p. 20.] *Note.*—Wine so made of Red Smyrna Raisins becomes sweet; but of black Smyrna Raisins it becomes like Madeira wine.

*Strata Terræ.* Immediately west of Northfleet, which lies about a couple of English miles west of Gravesend, there was by the highroad a large pit, **grop**, out of which they had taken partly *Pebblestone*, to lay on the road, partly sand for different purposes.

	ft.	in.
1. On the top <i>Pebblestone</i> , larger or smaller, mingled with a somewhat fine brick-coloured sand, though <i>Pebblestone</i> formed the greater part .....	2	6
2. A brick-coloured somewhat fine sand, at the thickest 1 foot, but thinner on both sides till it was entirely lost in <i>Pebblestone</i> .....	1	0
3. <i>Pebblestone</i> mixed with a somewhat fine brick-coloured sand, like No. 1; yet the thickness of this <i>Stratum</i> was not everywhere the same, for here in the middle it was thinnest, but towards both sides it became thicker .....	2	0
4. Same sand as No. 2 lost itself similarly in <i>Pebblestone</i> , otherwise the <i>strata</i> of this sand were always entirely clean and free from <i>Pebblestone</i> ...	0	6
5. <i>Pebblestone</i> , mixed with quantity enough of the brick-coloured sand .....	3	0
6. Same sand as No. 2, but we could clearly see that this had not come hither all at once, but by degrees, for it was divided into exceedingly thin <i>strata</i> .....	2	0

ft. in.

7. A dark brick-coloured or brownish clay. [T. II. p. 21.] It lay in some places immediately over the chalk; in other places lay the sand, No. 6, next above the chalk ..... 0 4

8. **Krita.** Chalk pebbles. This was the rarest bed we ever saw in any sand pit. It was mostly chalk, but nevertheless, mixed enough with small *Pebblestones*. Several pieces of chalk were externally quite smooth, shaped oval or round, and had the same appearance, **figur**, as *Pebblestone*, but when they were broken asunder they consisted of bare chalk. This bed was not of the same thickness throughout, but thinned out towards both sides till it was entirely lost ..... I 3

9. A brick-coloured coarser *sand*, much mixed with *Pebblestones* ..... 6 0

10. Chalk mixed with fine light *sand*, small *Pebblestones*, together with a number of broken *mussel* and snail shells ..... 1 ft. 6 in. to 0 6

11. A quite fine light sand passing to yellow, free from all foreign admixtures (*heterogeneis*), 4 feet thick, and who knows how far down? because the fallen gravel, sand, &c., prevented us from seeing farther down.

*Obs.*—That the *thickness* of one and all of these beds is not uniform, but sometimes thick, sometimes thin, sometimes entirely lost, as though someone had in former times tipped these strata out of a wheelbarrow, which can all be ascribed to varying directions of the currents, and the unequal movement of the waves, storms, &c.

From this hill it may be 1 or 1½ musket shot to the nearest *Chalk pit*, **kritgrop**, whose sides consist of bare chalk, and which is 12 or more fathoms deep, so that one can thus be sure that the whole of this [T. II. p. 22]

hill just described, with its many *strata*, and which lies higher than the surface of the hills near the chalk pit, most certainly overlies the chalk, **för visso står på krita**. All the hill banks, **strand backarna**, of the Thames,  $1\frac{1}{2}$  musket shot below this hill, consist of bare chalk, either pure or mixed with *Flints* and small *Pebblestones*.\*

**Svin**. To prevent these animals from grubbing up the ground, and entering the ploughed fields through the hedges, they were, in *Kent* and *Essex*, both ringed in the snout and bore on their necks triangular wooden yokes, exactly in the same way as is done with us here in Sweden.

**Alm. Elm**. When we were walking to-day down by the banks of the river below *Northfleet*, **Nordfleet**, where the river banks consist almost entirely of chalk, with interbedded flints here and there, with *soil*, **svartmylla**, almost of a brick colour thereupon, we remarked how the large Elms which grew in the hedges on the river banks had penetrated with their roots through the soil, which was here 2 feet thick or more, right down to the chalk; but as soon as they met the chalk they very seldom entered it, but then began to run horizontally along the bottom of the soil above the chalk. We remarked this of very many Elms. The chalk is probably too hard for their roots. It was only in one single place that I could see that a couple of Elm roots entered a fissure in the chalk for a depth of 1 foot or 18 inches

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\* The beds here described are now known as the *Oldhaven Pebble Beds* of the Woolwich Series (Whitaker), and the *Thanet Sand* (Prestwich). This section was cited by SIR TORBERN OLAF BERGMAN, (?) orig. work, *German tr.* by L. H. Röhl in *Welt-beschreibung*, Th. I., cap. V., § 39., p. 114 Greifswald, 1769-74, 8vo. And again transl. into German, incorrectly, by CARL ABRAHAM GERHARD, *Versuch einer Geschichte des Mineral-reichs*. Berlin, 1781-2, 8vo. Erster Theil, § 100, p. 190. [J. L.]

perpendicular. [T. II. p. 23.] The bank had slipped down, or been under-eaten by the water in the river, so that I could see this quite clearly in many trees.

[T. II. p. 31.] *The  $\frac{13}{24}$  Julii, 1748.*

**Et sätt at rida.** *A way of riding.*

In England they are much in the habit of practising a way of riding which is most strange, and not in use among us in Sweden. It is that two persons, the one a man and the other a woman, both sit on one and the same horse. The carl sits in front, guides and governs the horse in the usual way; but the lady [T. II. p. 32], or woman, sits behind him in the same way as women generally sit on horseback, viz., sideways. It is here common to see them so come riding, not only in small places and out in the country, but even in the middle of London; but especially in the summer time when they ride out of town for recreation.

*The  $\frac{14}{25}$  July.*

**Hö-bärgningen, Hö-stackar.** *Hay making, Hay stacks.*

The meadows were now in most places mown, but in some places they remained still to mow. In the fields the hay was treated in the same way as has been before named in this description of my travels, (T. I. p. 438). When it was quite dry it was set in *cocks*, **vålmar**, 6 foot high, and down on the ground there were spread cocks from which it was afterwards carried to the place where the stacks were to be made. If the fields lay near the farm, the hay was carried home and stacked, but if they lay any considerable distance from the farm, the stack was made in the field. In the high-lying places the hay consisted mostly of Sain Foin, but in low places, of kinds of grass.

The hay is carried to the stack in wagons, but where the fields were flat, they availed themselves of a very handy plan, which consisted in this, that they had a rope which was fastened to the harness or iron chains with which the horse drew. This rope was set round about the cock, and was turned down at the back and passed underneath it, and afterwards the rope was fastened by a loop to the chain, when the horse ran the whole cock to the stack, which was then being made in the field. There seemed to be little or no hay left behind the cock on the field [T. II. p. 33], but the cock came almost entire to the place. Instead of a bridge, they filled the dike with hay, over which they drove.

**Höstackarna**, the haystacks are made either round as in Fig. 1, or oblong, and in the shape of a house, as Fig. 2.



As the hay-stack was made the hay was trodden down at once, so that it might lie steady. At the beginning, and while the stack is still low, they have horses on it to trample the hay; afterwards, higher up, the trampling is done by many men. When they have got the stack ready in one of the aforementioned shapes, the sides *LN* and *MO* in Fig. 1, and *EF* and *CDGH* in Fig. 2, are cut, with

a knife specially made for the purpose, flat or smooth, partly that the cattle may not so easily be able to steal from it, partly that the rain and wet may not fasten thereon, partly that it might look better.

I will for clearness call the upper and out-sloping sides A E and A B C D, Fig. 2, and K L, K M, Fig. 1 'thatch,' **tak**, and the lower and in-sloping sides L N, M O Fig. 1 [T. II. p. 34], and E F, C D G H, Fig. 2, sides or walls. The stacks are always made so that they are widest at the thatch-band, **tackbandet**, and grow narrower afterwards down their sides all the way to the bottom. This also prevents the water which comes dripping from their thatch from rotting the walls or sides. Now follows how the thatching is effected. They are commonly thatched with straw, which is here taken from the wheat, as they reckon that the best. Sometimes they are thatched with hay, but not so often. Then they raise a ladder against the haystack, so that it comes to lie along the direction of the thatch. Afterwards they take the 'baster,'\* a small sheaf of straw, **halm-kärfva**, which is bound with straw at both ends. This is laid down at the thatch band L M, C D, in this way that it comes to lie horizontally. Afterwards they stick a 'rick-peg' (*pron.*

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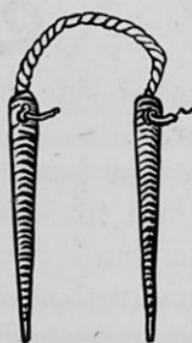
\*BASTER. A long, narrow bundle of straw about as large as one can span with both hands, still used as described by Kalm, Sept. 1886, also for laying along the ridge of the stack to make the crest of the straw stand erect. At Gaddesden Row, Herts, it is *pron.* like 'Master.' Also in the form 'BASSE (disyll.) a collar for cart-horses made of rushes, straw, sedge, &c.' Bailey *Dic.* 1736. *Normandy Patois*, *Batière*, a *packsaddle*, *Fr.* Bât, *Ital.* Basto; *O.N. (Icel)* Bastari, a *bast binder*, *Fr.* Bâtier, *Ital.* Bastière, *bastaio*, a *pack-saddle maker*.—*O.N., Dan., Swed., Ger., Dut., Eng.* Bast 'lime tree bark made into ropes and mats.' Bailey, *Eng. Dic.* 1736. 'Bass, Bast, matting, dried rushes or sedges.' Brockett *Northern Gloss.* 3rd ed., 1846. *Dan.* 'Bast. *Ger.* Bast, damit man bindet.' G. H. Müller, *Dan-Deutsch Wört.* 1800.—*O.N. (Icel.), Swed.,* Basta to bind into a bundle, *Dan.* Baste og binde, to bind up; &c. [J.L.]

'reek-peg'), a narrow stick, right through each end of this baster or small straw sheaf into the stack, that the baster may lie steady. On this baster is afterwards laid loose straw about 3 or 4 inches thick, or 6 inches, or even a little more, so that the narrow ends of the straw are turned up towards the top of the stack, and the thick are laid across the above-named baster, **kärfva**, so, however, that the ends project a little beyond the lower sides of the stack, to prevent the water which in wet weather runs down the thatch from pouring on to the sides of the stack. After they have laid the straw thus, they have ready to hand long, narrow, slender sticks [the 'rick-pegs'], which are sharpened at one end. One of them is taken and stuck in with the sharp end down in the stack, on one side of the straw already laid on, yet towards the higher part of the same. The rick-peg is then bent [T. II. p. 35] across the straw so as to lie horizontally. This horizontal part is called 'the rod.' To make it lie still, and at the same time fasten the straw, they have another **språta**, 'spray' of 20 to 25 inches' length, which is sharpened at both ends, and in the middle is slightly cut out on one side, so that it can be bent together, as in the accompanying figure, without breaking off. The 'spray,' P Q R, thus bent is set into the stack in such a way that one end, P, goes in one side, and the other end, Q, on the other side of the 'rod' or long spar laid across the straw.



The bent spray, P Q R, is then pressed or beaten down till it fastens the end of the 'rod,' and likewise presses the straw and holds it fast. Afterwards new straw is taken, and is laid above this in the manner before described, to fasten in such a manner that the large ends of the new straw come to lie above and to cover the small ends of the straw previously laid below, and the

same with the 'rods' which were laid across it. On this new straw no rod was set, but they take still another lot of straw and set it a little higher up, and then it is first fastened with a long 'rod' across, in the same way as has been described before. In this way it is continued upwards till one comes to the top, and there also fastens the straw. After that the ladder is moved a little more to one side, and the thatching is begun again down at the thatch-band, in the manner before described, tight in to that which is already thatched, and is continued so upwards. The row which is thatched every time [T. II. p. 36] from the bottom of the thatch, **takfoten**, up to the top before the ladder is changed, is as broad as the carl can reach to lay when he stands on the ladder. One or two carls are down below, who prepare the straw and give it up to the one who is thatching, who lays this straw near him till he requires it. That he may have the straw so much readier to hand, he has two pieces of stick of 2 to 3 feet long, which he sticks into the stack in a horizontal line, about two feet from each other. Above and against these the straw is laid; but if it blows hard, he has still beside these, two other sticks, each about two feet long, sharpened at one end, and fastened together by a string, **et band**, at the other, as in the figure.



He sticks these pegs, **käppar**, into the stack, the one on the lower side of the straw, and the other on the upper side, when the string which is between them comes to lie across the straw, and holds it tight so that it cannot blow away. As soon as the carl has laid two rows of straw, or changed the ladder twice, he has a somewhat thick stick, **käpp eller kaffe**, about four feet long, with which he beats down the straw to make it lie even, and afterwards smoothes down the straw with it,

beginning above at the top of the stack, and so downwards, when he also sweeps away all the loose straw which lies on the stack, and makes the straw-thatch on the whole smooth. After that he continues [T. II. p. 37] to thatch the upper part of the roof of the stack, in the manner before described.

The lower sides, B D and C E, never stand perpendicular, but are always made so that the higher they get the farther they project outwards, so that the stack is narrowest down at the ground, and broadest up at the thack-band. Both the round and square have this peculiar shape, which prevents the water that drips down from the bottom of the thatch from falling on the lower sides and rotting them. No pole is set in the middle of a stack, as with us.

In some places they make very large and high stacks. When the stack becomes so high that they can no longer reach to cast the hay from down below up to the carl upon the stack, there is built on one side of the stack a scaffold of boards, or a door which lies on two poles, on which a carl places himself, to whom the hay is first cast, and who afterwards sends it farther up on the stack.

When the stacks are thatched with bare hay, sometimes also when they are thatched with straw, they are often made smooth on the surface with simply a rake, **räfsa**, so that they, as it were, comb down the top of the stack with it. The shape of the haystacks and the manner of making them was everywhere in this district the same as I have now described. Most haystacks were here thatched with straw.

Up at the summit of the haystack the spars always lie bare and uncovered, and thus come to be seen there. The stacks were always so arranged that the thatch was very steep, for the rain and wet to be able to run off so much the quicker. The *pitchforks*, **Järngafflarna**,

they used were of different sizes and lengths. In those with [T. II. p. 38] which they cast the hay up on to the stack, the pitchfork, **järngaffeln**, itself was 1 foot long and 6 inches between the 'grains' or 'tines,'\* **grenarna**, fastened to the handle with an iron ring, as on an ice-pick, the shaft two fathoms long, or as long as one wishes. The small forks, to toss the hay on the meadow, were 6 inches long, and 4 inches between the 'gaffles' or 'tines,' **gafflarna**,† the length of the shaft at will. The tines or prongs on all these forks were not straight, but slightly curved, **Grenarna på alla dessa gafflar voro ej rake, utan litet krokuta**. A figure of such a *hayfork*, **högaffel**, can be seen in Linnæus's *Skånska Resa*, p. 303, fig. *b* [Stockholm, 1751. 8vo.]. When they here made a haystack, there commonly stood a carl who, with one of the before-named pitchforks, **järntjufvor**, pitched up the hay. One or two carls received it, and spread it out evenly on the stack, as they found it best. Afterwards there were commonly four lads who did nothing else than constantly trample it. The lower sides, or the lower parts of the stack, were made smooth with a rake, and the hay was also raked off, so that the stack in its lower parts might be so much narrower, and wider upwards.

*The  $\frac{1}{2}$ <sup>5</sup>/<sub>6</sub> July.*

In the morning we walked from *Gravesend* to *Rochester*, which lies 7 English miles from the first-named place.

**Utsigten af Landet.** The appearance of the country. We had the whole way a variety of ploughed

\* 'Tine the grain of a fork' (Bailey, *Eng. Dic.* 1736), *i.e.* branch or *brong*. [J. L.]

† 'Gaffle, part of a crossbow.' *ib.* [J. L.]

fields, meadows and orchards, all planted round with hawthorn hedges, in which stood all kinds of foliaged trees, **löpfrän**, such as Elm, **Alm**, Elder, **Fläder**, Blackberry-bushes, **Björnbärsbuskar**, Ash, **Ask**, Oak, **Ek** [T. II. p. 39], Dogwood, **Benved**, or Cornel (*Cornus*), Aspen, **Asp**, Ivy (*Hedera Arborea*, C. B.) [H. Helix], Sloe, **Slån**, Privets (*Liguster*), the Spindle-tree, **Alster**, *Euonymus* [Europæus], Maple (*Acer Campestre minus*) C. B.

Here and there lay some beautiful farm. The country here, as in most places where we were in England, was not even and flat, but a continuous chain and variety of somewhat high and long-sloping hills, with valleys between. These hills had all sorts of shapes, sometimes round as rye-bread loaves, sometimes oblong, and of various other shapes. The *inclosures*, or ploughed fields and meadows, lay on the tops and the sides of the hills, as well as down in the valleys, **dälderna**. In some places these hills were steep enough. They all consisted of bare chalk, which had only a coating of soil upon it, of 9 inches, 1 foot, 15 inches, or 18 inches, yet in most places not more than about 1 foot thickness, which we could plainly see the whole way where the high road crossed these hills and they had been digging on the sides of the road; to say nothing of the fact that the same appeared in all the chalk-pits, **kritgropar**, which were dug here and there. On the whole of this walk we could not see the least sign of any flowing and running stream or river, excepting the river *Medway* (Midway) which passes by Rochester. Such running water seems to be very rare on the chalk hills and in their neighbourhood.

The greater part of the *inclosures*, or **täppor** planted round with hedges, which we saw to-day were ploughed fields, sown partly with *Wheat* (*Triticum hybernum aristis carens*, C. B.), *Barley*, **Gumrik**, *White Oats* [T. II. p. 40],

*Beans*, or *Pease*. I do not know of which of these kinds there was most, either of Wheat or Barley. It seemed as though there was more Barley on the Gravesend side, and that Wheat prevailed around Rochester. Of *Oats* there was the least. We also saw in some places large hop-grounds, **hummel-gå**. On the Gravesend side there were extensive inclosures, planted with Cherry-trees; but towards and at Rochester there were not so many of them. When we had come a mile out of Gravesend we came to a little wood which consisted of all the above-named kinds of leaf trees, where we set down as a great rarity two trees which we had not before had the pleasure to see growing wild in England, viz., our *Birch*, **vår Björk**, which stood in a little bog,\* **Kärr**, and *Juniper* bushes, **Enbuskar**, of which last we saw several on a chalk-hill, where they grew on the rough chalk, and had scarcely 3 inches of soil upon the chalk. They seemed, however, to be tolerably luxuriant.

**Trägårdar af Kersbärs, Äpple, Päron, och Valnöt trän.** *Orchards of Cherry, Apple, Pear, and Walnut trees.* I have just said that we saw here a great number of Orchards, planted with Cherries and other fruit trees. The notes I made about the orchards in this district are given above under the 7th July. As far as regards the other trees, we saw likewise a multitude of apple and pear trees, planted either in the same orchard with the cherry trees promiscuously, or also by themselves. The earth under and between them was in [T. II. p. 41] the same condition as I described on the 7th July respecting the cherry trees, ploughed up, and used as an arable-field, or grassfield, so that these fruit-trees stood in the middle of crops or grass. They were, nevertheless, much better adapted to have crops sown under and between them,

\* This certainly fixes the site at Denton. [J. L.]

because the crops ripened as soon as, if not before, the ripening of their fruit, and thus there was no necessity for them to trample down the crops while gathering the fruit. At the sides of these orchards, and often at the sides of the ploughed fields, and at home at the farms stood plenty of large walnut trees, there planted, and now full of fruit.

*Strata Terræ.* I remarked a little above, that nearly all the hill sides, **backar**, between Gravesend and Rochester consisted only of chalk, **af bara krita**, with only a thin *stratum* of soil, **svartmylla**, lying upon it; yet we saw in 2 or 3 places that some of these chalk-hills, **kritbärg**, had above and upon them not chalk, but a hill of sand, **en backa af sand**, at times mixed with small *Pebblestones*, which sandhill lay upon the chalk, which was beneath it, and it was remarkable that the chalk-hills which had such a sandhill or collection of sand upon them, were commonly the highest hills of all we saw along this road. But how this sand in former ages came there, either by some river, or in what way, I cannot say. We found, however, that the sand in such a hill upon the chalk, was not of one kind only, but consisted of many sorts which lay alternately upon one another. I will give their position *in one of these hills*, **backar**, *through the middle of which* the highway ran.

[T. II. p. 42.]

	ft.	in.
1. <i>Svartmylla</i> . On the top, <i>soil</i> of 9 to 12 ins. thickness, but sandy enough.....	1	0
2. A yellow fine sand, with just coherence sufficient to form lumps <b>hårdt i klimpar hopsittande fin sand</b> .....	2	9
3. A light-yellow quite fine looser sand .....	3	0
4. A very fine <i>grey sand</i> .....	3	0
	9	9

and who knows how much more, because the bottom of the pit prevented us from getting farther down, but, that it could not go a very great depth, could be concluded from this, that the hill-sides on both sides below, consisted of bare chalk, as we saw on both sides of the high road, which was dug in them. Here and there in each of the above-reckoned sand-strata, there were some small pieces of, I know not what I shall call it, which looked as if it had been a nail rusted away.\*

### Hägnad om åkrar, ängar, &c.

Around nearly all the enclosures, such as ploughed fields, meadows, orchards, &c., were planted hedges of hawthorn, but they were in some places worthless enough. In only a few places were there any 'Raddles,' or wooden hurdles, **Ris-gärdes-gård**; at times, but seldom, one got to see such *wattled-hurdles*, **språt-gärdes-gård**, as were described above (T. II. p. 14, *orig.*).

**Åkrarne.** *The ploughed fields* we saw to-day, lay both on the tops of the hills, and on their sides. I have recently named (T. II. pp. 39, 40, *orig.*), the kinds of crops that were sown on them. There were no dikes or water-furrows ever seen on or near them—both of which, however, would be of little use here, because the chalk soil seems to absorb all the water [T. II. p. 43], in respect of which we did not see the least flowing water all along this road. I saw no ditches by the road-side, which is a sign that the water cannot possibly remain there long. If by the side of any single hedge, there was sometimes found a ditch, this seemed only to be made to get earth out of, to make a bank on which the hedge had been planted, and to get mould to cast up on to the roots of

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\* At Poling Wood, Sussex, where the Reading clays are dug for the pottery, these pieces of "what-you-may-call-it" are called by the workmen "Rock." [J. L.]

the hawthorn of which the hedge had been made. There were no acre-reins out on the ploughed fields, but only very narrow ones at the sides of the fields, close to the hedges. These were so narrow that one could with difficulty walk upon them still less mow any hay there. In most places these ploughed fields lay full of small *Pebblestones*. The land was ploughed quite even and flat, that which was sown with wheat as well as that with other kinds of crops, but there were some riggs or stitches. There were very many weeds on a great part of their fallow fields. Some were thus full of quickens, which had been sown there; others full of wild poppies, **Vallmoge**, various kinds of Thistles, **tistlar**, and other weeds, **ogräs**. But it was not to be wondered at, because the ploughed fields in such places at this time of the year were left untilled.

With such agriculture, **åkerbruk**, it is not difficult to understand why their *Wheat, Barley, Oats, Pease* and *Bean-fields*, stand so full of wild Poppies and other weeds, viz.: partly because they manage the ploughed-fields so badly, and leave the weeds all freedom to run to seed and sow themselves. I remarked that they used frequently to drive horses, sheep, and cows, to bait on the same, but [T. II. p. 44] while they meant to reap a profit, they caused themselves double loss; for while, it is true, they commonly ate up the wild poppies, yet several of the other rank weeds were left (such as thistles, &c.), mostly to stand untouched by the cattle. Such a fallow-field was often left to lie two or three years uncultivated and as a pasture.

Though it happened, truly enough, that when the earth got as it were a coating of grass-sward, **gräsvall**, over it, the number of thistles and other weeds diminished; yet as soon as such a pasture was again ploughed up, the earth loosened, and cultivated as a ploughed field, and sown with seed, the manifold seeds of weeds lying in the

earth also got new life, came up to the day, grew, **grodde**, and in many places smothered the crop; for their seed has the property, that if the ground is hard, and unfit for them to come up, they can lie many years down in the ground without growing or taking harm, but quicken as soon as the earth is moved and turned over. From this we see how necessary are many courses of ploughing during the summer in a field confounded with weeds.

The *Pease* in these fields were partly sown in rows and the earth ploughed up between: the weeds uprooted, and the mould moved on to the roots, so that the stalks are on a hill. We also saw the *Pease-land* sown in the same way in rows, but never cleared of weeds, or the earth dug up between, but the weeds were entirely smothering and taking the life out of the Pease. In many places the *Peas* were sown *broad-cast*, as with us, and there the weeds and the Pease had to fight with each other for existence, as they best could.

The Pease were nowhere furnished with sticks.

[T. II. p. 45.] Of the *Harrow* and *Roller* here used there is nothing particular to record; they are mostly like ours. The *Plough*, **Ploggen**, in Kent has this advantage, that the ploughshare, **vändbrädet**, can easily be changed to whichever side of the plough one wishes. But in other respects it merits no recommendation, because it is very heavy and unwieldy.

The soil, **jordmon**, on all these ploughed fields was of so loose a nature, that they could in the greatest drought plough it up when they wished. In such a loose earth they nearly always set three pair of horses, as large as the largest Dragoon horses, before this plough; then one full-grown person was required to hold the plough, and a boy, **gässe**, to drive the horses: we sometimes saw even as many as five or six pairs of such large horses

set before one plough. Such an earth, for whose ploughing up they laboured with three pairs of horses, we could at all times in Sweden with the *Westmanland* plough, and especially with Baron Brauner's, without doubt equally well and finely plough up with one pair of horses, if not with a single one. The *Kentish plough* has this peculiarity that it ploughs deeper than most other ploughs. We saw however, in some places to-day, fallow fields, which lay quite well farmed and ploughed up, so that the earth was friable and fine as the best new-made bed in a garden. Beans were mostly sown in rows, and treated in the same way as described above (T. II. p. 16 *orig.*) yet they were also here and there sown, as with us, *broad-cast*.

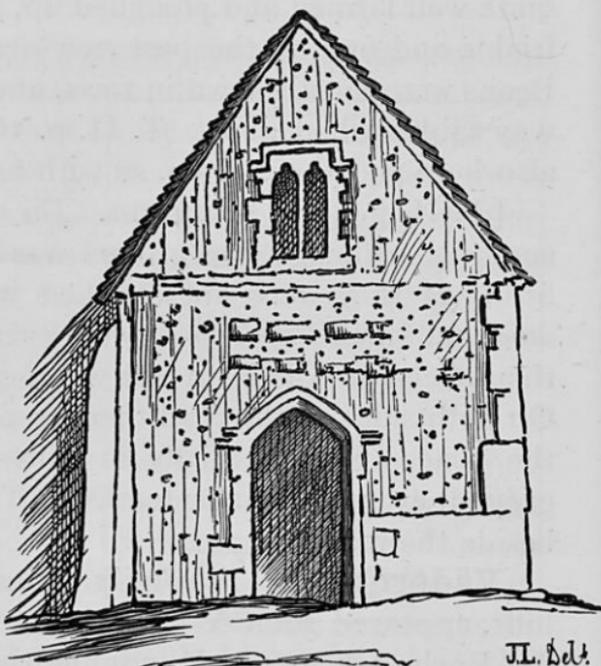
[T. II. p. 46.] **Vägarna.** *The roads* here were good enough. Although the ground was chalk, and therefore firm, yet they were not satisfied with that, but *coarse sand* and small *Pebblestones* were everywhere carted on to them, because Chalk in wet weather is slippery enough. On both sides of the road there were mostly hedges, and the road went, especially in hills, deep down in the ground, even to eight or ten feet. There were no ditches beside the road.

**Väderqvarn.** *Windmills.* Here and there on the hills, appeared some Windmills, built in the usual way. At Rochester was a Windmill which pumped up the water for the use of the town.

**Västanvind.** *The west wind strong in England.* That the west wind in this part of England must be one of the longest lasting, and strongest winds appeared clearly from this, that in the plantations, **Trägårdar**, which nevertheless, lay quite even, and not so especially facing this wind, the trees bent over from the west, with the upper part considerably over towards the east side, which oblique and leaning growth was without doubt caused by the aforesaid west wind.

**Kyrkor.** *Churches, the ancient ones mostly of Flints, &c.* I have mentioned above (T. I. pp. 479-80), that nearly all the old Churches in this part were built of Flints, as *Chadwell* in Essex, *Northfleet* west of Gravesend, and several others in Kent. To-day also we saw that many Churches in *Rochester* were for the most part built [T. II. p. 47] of bare flint, **Flinta**, only that they used some Portland stone among them.

We went afterwards from the high road up to a hamlet, **til en by**, where we saw an old Church which they used as a *malthouse*,\* **höllo på at göra til et mälthus**. This was similarly almost entirely built of Flints, only that the window frames and mullions, **fönster karmar och ramar**, and the door-posts, **dörträn**, were of Portland stone. The windows were quite small. There appeared, truly enough, bricks, **tegelstenar**, in the walls in one place and another, but it could at the same time be plainly seen, that the wall had there been broken, and that the brickwork was the work of later times.



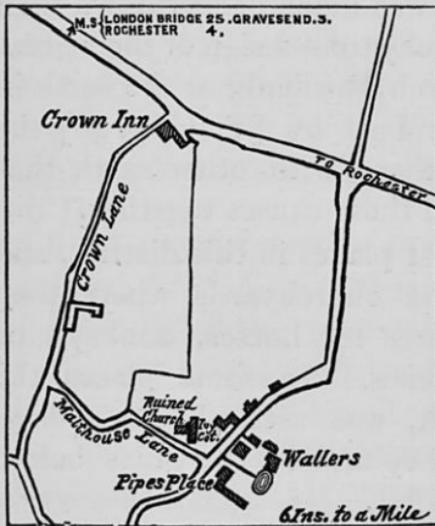
West Front of Ruined Church at  
Ivy Cottage, Shorne, 1887.

\* In lane to Shorne. Kalm was the first writer who notices this ruin. The *Kentish Traveller*, 4th Ed., 1790, has a paragraph, p. 116: "On the

We saw afterwards another Church [the description applies to Shorne Church], which similarly, was for the greatest part built of Flints, **flintor**, yet that *Portland* stone was here and there built into the wall. The window frames and tracery as well as the door-posts were always, in all such old Churches, of Portland stone; also frequently the angles of the Church walls and the tower.

The windows were mostly small enough. For which

west side of the lane opposite to the house marked Mr. Maplesden's in the



Map, the traveller will probably notice an ancient Chapel or Oratory. There can be no doubt of its having been a sacred edifice, because in digging for the foundation of the contiguous building a stone coffin and many human bones were discovered. In Mr. Thorpe's *Antiquities* is an engraving of the North-West view of this Chapel, but it is left to the researches of future antiquaries to ascertain when and by whom it had its original, no deed or other historical evidence having yet been met with relative to its institution or endowment." The Map referred to in the above note is on the scale

of one inch to a mile in the *K. T.* Mr. Maplesden's house is now called *Pipes Place*, and a little cross-lane into the above lane from the west and passing south of the ruin is called 'Malthouse Lane.' I have not been able to find the alleged view in any of the thirteen plates in Thorpe's *Antiquities*. On August 10th, 1887, I visited the ruin, when Mrs. Cheesman, æt 84, told me that when she was young it was always called 'the Malthouse,' but that she did not know that it had ever been used as such. Kalm's description is accurate. The windows are all two-light, but the mullions are gone. This was a true Church; A *Piscina* and two *sedilia* are to be seen on the south side interior. The architecture is pure Early English, probably early 13th century. The curious history of the extinct Merston Church close by, leaves room to suppose that this too was once a parish church. This venerable ruin forms part of a modern residence known as Ivy Cottage, and seems to be totally unknown to modern Archæologists. [J. L.]

reasons we may conclude: (1) That the brick kiln, **Tegelbränneri**, in former times seems to have been little known, or at least not specially used in this district. (2) That the use of Glass, **Glasbruken**, also in those times was not very great.

On the south side of *another Church* there have formerly been three large doors side by side; but they were afterwards built up with flints, and made only into small windows.

Some of these old churches now stood deep down in the earth so that their floor was much deeper down than the outer surface of the Churchyard—a sign of their great age. Thus, either the Church has sunk, or the earth in the Churchyard has been raised by [T. II. p. 48] the corpses and coffins buried there, with other earth that had been carried there, or all these causes together.

I also noticed that in most places in this district, and also in Essex, they used the churchyards where they buried their dead as pastures for horses, donkeys, or pigs, but especially for horses. In some places the churchyard, **Kyrkogården**, was used also as a hayfield or meadow, so that they mowed the grass before the cattle were driven in thither.

*Rochester* is a beautiful town, tolerably large, and very old, lying on both sides of the river *Medway*,\* about 27 English miles from London. Here about are several hills, and part of the town also lies upon them, but still it is mostly down in the valleys by the river side. The houses are mostly of brick, some of them quite beautiful. There are several churches here, some of antique architecture, **gammal modig byggnad**. Over the river

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\* *On both sides of the river.* Strood occupies the left bank opposite Rochester. [J. L.]

Medway runs a large stone bridge,\* which is reckoned to be one of the finest in England. In the town is a Cathedral and Bishop's Palace. A short distance below the town lies the famous *Chatham*, where the English men-of-war are partly built, repaired, and kept.

In the evening we came back to Gravesend.

*The  $\frac{16}{27}$  July, 1748.*

**Brunn i fasta Kritbärgen.** *A well in the solid chalk.* Between two of the chalk-pits at Northfleet there ran a wall or projection of [T. II. p. 49] bare chalk, which they had left untouched, from 8 to 9 fathoms wide. On both sides of this wall of chalk were great chalk-pits of 6 or 7 fathoms deep. The sides thereof were perpendicular. Near one side of this wall they had dug a well, **en Brunn**, down in the dense and solid chalk. This well was round, 3 feet 6 inches diameter, and *steined* with brick. I measured its depth, and found that from the surface of the ground down to the upper surface of the water in the well was 57 English feet. The water which was taken from it was very clear, and tasted as nice as the best **Käll-vatten**, spring-water, and was also very refreshing, **lätt druckit**. Those who live hereabouts take from it all the water they require for cooking, family drinking, brewing, boiling, washing clothes, and for punch, tea, &c. Besides this, 8 horses and 4 cows were watered daily with the same well-water, for although the river Thames is close by, yet they do not give its

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\* *Rochester Bridge*. For its history see Lambarde, *Peramb. of Kent*, 1576, 4to, pp. 303-314; Stow, *Annales*, 1615, fol., p. 335; J. Harris, *Hist. of Kent*, 1719, fol., pp. 259-262, &c.; W. Wildash, *Hist. of Rochester*, 2nd Ed., 1817, 8vo., pp. 35-49, with a beautiful engraving of Rochester Bridge, Castle, &c., from Strood Quay. From whence (p. 41) is gathered that "In what year the present stone bridge was begun cannot accurately be determined; it was, however, *completed* in the fifteenth year of Richard II., 1392." [J. L.]

water to horses or cattle, because it is very salt, as the Floodtide, **Floden**, *refluxus maris*, brings up salt water from the sea, and if the horses and cattle drink of this, it is said to make them ill. Although this is a dry summer, it has never been remarked that the water has diminished in this well. I asked whether the people who drank of it felt well after it? They answered that better water cannot be than this, and that they never feel ill from it, or are in any way subject to illnesses more than other people. I now drank freely enough of it, without experiencing the least inconvenience afterwards. I have also during the whole of my visit [T. II. p. 50] to Gravesend, as well as elsewhere in England, never experienced in the least degree such an effect as some ascribe to the chalk water, **kritvatnet**, viz., that one unaccustomed to it will at first have diarrhoea until he becomes used to it. Most, and probably all the wells in Gravesend are dug in the bare hard chalk; so that the water which I drank at meal-times and when I was thirsty the whole time I was there, was no other than that which had filtered through the chalk, **silat sig genom Kritan**, but I have not noticed the least change in the body in consequence.

The  $\frac{17}{8}$  July, 1748.

*Strata Terræ.* On the south side of the Windmill Hill, **Väderqvarns backen**, which lay near Gravesend, was a large pit from which they took sand. Here we saw what the hill on the south side consisted of, and measured the *strata*, which were as follows, beginning at the top:—

	Ft.	ins.
1. Svartmylla, soil .....	1	0
2. Soil and a fine sand mingled together. These together produced a yellow colour .....	1	0
3. A light-grey fine sand. In it were here and there ochre or rust-spots .....	1	6

	Ft.	ins.
4. Light ochre-coloured sand, which went in waves .....	0	0½
5. Light-grey sand, same as No. 3 .....	1	6
6. A rust or dark ochre-coloured sand.....	0	1
7. A fine, very light sand .....	2	6
8. An ochre-coloured fine sand .....	0	0½
9. Fine very light sand, the same as No. 7, which went down to the bottom of the pit, <b>gropen</b> , and who knows how far down ?		
	7	8

Higher up on the hill was another *sandpit*, **sandgrop**, the bottom of which was higher than the top, **Kullen** [T. II. p. 51], of the foregoing. There the beds, **hvarfvæn**, were in this order:—

	Ft.	ins.
1. Svartmylla, <i>Soil</i> , about 1 foot, but a good deal mixed with a fine brick-coloured sand and small <i>Pebblestones</i> .....	1	0
2. <i>Pebblestones</i> .....	2	6

These *Pebblestones* were mostly the size of marbles, **knäckar**, coal-black, round or oval, quite smooth, as though they had been ground or polished. When such an one was broken it was found to consist of bare flint. No angular ones were seen at all.

3. An ochre-coloured fine sand .....	2	6
4. A fine white sand .....	0	3
5. An ochre-coloured sand .....	0	1
6. A fine white sand .....	0	2
7. The ochre-coloured sand .....	0	2
8. The fine white sand .....	0	2
9. A grey clay falling into cubes, <b>En grå i tärningar fallande lera</b> .....	0	0½
10. The fine white sand .....	0	2
11. The grey clay .....	0	0½

	Ft.	ins.
12. The ochre-coloured sand .....	0	2
13. The fine white sand .....	0	1
14. The grey clay .....	0	1
15. The fine white sand .....	0	0 $\frac{1}{3}$
16. The grey clay .....	0	1
17. The fine white sand .....	0	3
18. The ochre-coloured sand .....	0	1
19. The fine white sand .....	0	2
20. The grey clay .....	0	1
21. The fine white sand .....	0	3
22. The grey clay .....	0	0 $\frac{1}{3}$
23. The fine white sand, full of rust spots .....	1	0
24. [T. II. p. 52.] A light grey sand .....	0	1
25. The fine white sand .....	0	9
26. The ochre-coloured sand .....	0	1
27. The fine white sand .....	6	0
28. The ochre-coloured sand .....	0	1
29. The fine white sand ..	0	6
30. The light grey sand, full of rust spots .....	2	0
31. The ochre-coloured sand ...	3	0
32. Pebblestones, mingled with a light yellow sand .....	1	6
33. The fine white sand .....	4	0

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27 4 $\frac{5}{6}$

No more could be seen on account of the depth of the pit. Whether all these *Strata* came into their present shape at the sin-flood or on any other occasion, I leave others to divine. The whole of this high sand-hill, **Sandbacken**, does most probably stand upon solid chalk, because all the country round about consists of bare chalk with a thin crust of earth upon it.\*

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\* These sandpits may still be seen, but are now occupied by gentlemen's houses. [J. L.]

**Måssa.** *Mosses.* On the hardest chalk hills, it is true, some fine *Hypnum* sometimes appeared; but we nevertheless remarked that this district around Gravesend was not especially favourable for *mosses*. There was no sign of these seen, though I looked carefully for them, either on the arable fields or *inclosures* which were sown with Clover, Sain Foin, &c., not even once on the *reins* by the hedges.

The Woodlouse. *Oniscus cauda obtusa integerrima.* Linn. *Fauna Svecica*, 1256, occurs in multitudes everywhere on the chalk, that it has as it were taken up its quarters in these places [T. II. p. 53.] When anyone came near it, it drew itself together, so that it lay perfectly round, and looked like a very small, black, shining egg. This is larger than our ordinary Swedish *woodlouse*, **gråsuggor** (plural).

The  $\frac{1}{2}$ <sup>s</sup>/<sub>9</sub> July, 1748.

*Phalæna subulicornis spirilinguis*; alis superioribus subcœruleis, punctis sex rubris, inferioribus omnino rubris. Linn. *Faun. Svec.* 814 [Anthrocera Filipendulæ, *Burnet moth*]. This beautiful *moth*, **Fiäril**, which made quite a show with its beautiful red colour, had in particular taken up its abode in old Chalk pits overgrown with small bushes, where it flew in multitudes; but outside them it was very rare. It flew very slowly, and not so fast as the other *butterflies*, **Fiärilar**. It sat very much on the flowers of *Scabiosa pratensis hirsuta* C. B.

*Aranea abdomine fusco ovato, lineâ exalbida pinnata, cauda bifurca*, Linn. *Faun. Svec.*, 1223 [A. labyrinthica] occurs here in multitudes, on the chalk hills as well as in other places. I saw it also in Essex. The accurate description which Linnæus gave in his *Fauna Svecica* (*loc. cit.*) of the manner in which it makes its house, **bo**, relieves me from the necessity of repeating this, because

this *spider*, **Spinneln**, makes it here in England almost in the same way. The difference is only this, that we found his subtle house and snare not only laid out over the grass, but also on the sides of sloping banks, **backar**, when the earth had fallen down; and on these places he commonly chose his house, where some little pit of a hand's breadth [T. II. p. 54], and depth ran into the bank. There he made his cylindrical house down in the aforesaid hole, above which he spread out his net on all sides, that it looked like a great funnel, **tratt**, especially if there were some small bushes in the neighbourhood, on which he made fast some ends of his net. A fisherman setting his bownets, **Ryssior**, cannot set them more cleverly. He had often made his house up in the bushes, where the threads of his net extended a couple of ells on every side from his cylindrical hole, so that no insect could come near the bush without being snared in the net. He himself always sat either at the bottom, or opening of his cylindrical hole, so like an open purse, ready to spring **til vägs**, forward, as soon as there was any booty to win. When any insect was caught, he sprang at once upon it, and bit it several times in the head, then carried it into the entrance of his nest, where he ate it up. It was enjoyable to see what work he had with the *Curculionidæ* beetles; for as these are covered over with a hard shell he could next to never reduce them to order. As soon as they came on his net he seized them, but they were so clever that they drew in the feet and head. He then bit them well on the shell, but without effect; then, as soon as he left them they again began to crawl, when he sprang up again and bit them: but equally in vain, so that he at last became tired, and let them go their way. He had always down in the bottom of his house a hole through which, when pressed by necessity, he could have his escape, and not

be caught, when he always sought [T. II. p. 55], his safety behind some twig, or down in the earth, when any one chased him, but directly one again became quiet, he 'crope,' **krop**, through the hole into his house, advanced to the opening to see whether any further danger was brewing, or if all was quiet. I sometimes tore their house asunder, when they commonly, after one or two days, had it ready again.

**Svin.** In *Kent* the farmers generally have no more pigs than they require for their own use, so that they seldom come to sell any of them; but in and near *London*, the Distillers keep a great many, often from 200 to 600 head, which they feed with the lees, **drank**, and any thing that is over from the distillery: and after these animals have become fat enough, they are sold to the butcher at a great profit.

In the same way, and with the same object, a great number of pigs are kept at starch factories, which are fed and fattened on the refuse of wheat, when the starch is manufactured. The house where the swine are kept, is cleaned and washed every day.

**Âkrar, Hvete, Korn, etc.** *Arable fields, Wheat, Barley, etc.* Several old and enterprising farmers in this district, told me that when the arable fields are well prepared one can get a return from wheat of 20 times the grain, and sometimes a little more, but the fields must then be well managed. Similarly they can get 20 times the grain from Barley, on a well-cultivated field. The kind of crop is changed yearly [T. II. p. 56] viz., when the fields have lain one summer fallow, they are sown either with *wheat* or *turnips*, after that with *Beans*, then with *Barley*, or *Oats*. The fallow fields are commonly ploughed three times during the summer; if they go so far, they are ploughed 4 times, and harrowed and rolled between each ploughing. Chalk is also used here for

manure, on the ploughed fields, and when a field has once been manured with it, it is not necessary for them to manure it again for 10, 14 or more years.

### **På styf lergrund sades Kritan vara skön.**

*On a stiff clay soil the chalk was said to be good.*

Among other ways of manuring arable fields, it is reckoned as the best to fold sheep on them in the summer, during the night in a little narrow fold, so that they stand quite close together. One and another enterprising farmer said he had himself tried to sow wheat in rows, and ploughed up the earth with a horsebreak, a little neat plough which is drawn by one horse, between the rows; but it had not turned out well for them. Nevertheless, they thought that it might be done, otherwise the horsebreak is much used here to plough and clean away the weeds between the rows sown with Beans and Pease, since it lightens the labour very much.

Turnips are also much sown here in Kent for sheep, swine, and oxen to feed and fatten them with.

The Farmers said that they found the best time to sow wheat here, to be within one month before Michaelmas (after the *Old Style*) many, however, sow it one month after, but this plan is not held to be so good.

**Ängs-skötsel.** The management of *Grass-land*, *Sain Foin*, *Clover*, &c. Most of their grass fields in this district are sown with some [T. II. p. 57], particular kinds of hay, such as *St. Foin*, *Clover*, *Tares*, *Vicia*, *Lucerne*, &c.

*Sain Foin* is said to thrive very well on the chalk hills, **Kritbackar**, which we also found to be everywhere evident. For 30 years back they had not known so much of it used as now. They learned to use it from France. *Sain Foin* is an excellent food for horses, but for cows it is, when dried, not so good as good hay. When it has once been sown, it can sometimes stand for 16 or more

years before it need be sown again. It is either given to the horses whole, as it is, or it is chopped up in a chaff cutter, **i en hackelse-kista**, stalk and all, very small, and so is mixed with oats, baiting, **agnar**, beans or pease, and is afterwards given to the horses, who thrive perfectly well on it. They cannot cut the *Sain Foin* here more than once in the summer. *Clover* is also very much sown here, but it does not last so long as *Sain Foin*, because it must be sown with wheat or something else, and a parcel of land is sown time about. They hardly ever carry more than two cuts, **slåttar**, before it is sown again, nor is it worth while to let it stand longer, for when one has cut it two years or two summers, it loses, **tyner af**,\* so much after that that they can scarcely go on to it with the scythe, **lian**, therefore when they have mown it two summers, and very often only one, the field is ploughed up anew, and sown with *Clover*, but although it cannot stand long before it must be sown again, yet it saves a great deal of inconvenience, above all in this district, where no ordinary kind of grass will [T. II. p. 58] thrive; because this *Clover*, the first summer it is mown, gives such a very great abundance of a rich and good hay. As a food for horses it is most excellent, but not so for cows, although it is true they milk a good deal from it, yet the milk acquires some particular flavour in consequence, and is not nearly so agreeable as when the cows are fed with good grass. One can particularly easily recognise this *Clover-smack* in the milk, if the cows are allowed to go out in the summer and eat the green clover. At that time one must take care that they are not allowed to eat as much as they like of it, for the clover tastes so nice to them, that they cannot stop, but

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\* 'TINE, to lose v. JAMESON. Tine, tyne, and *Suppt.* Tine.' J. T. BROCKETT. *Glos. of N. country words.*- NEWCASTLE, 1846. [J. L.]

sometimes they eat it so greedily that they swell up and die. The *Clover* has in one respect the advantage over other kinds of hay, that it can commonly be cut twice in the summer. Some have also now begun to sow *Lucerne*, but it is still uncertain how it will succeed. [This is a very interesting notice].

**TARES.** (*Vicia vulgaris Sativa*, ♀. *Bauhin*) are also sown here by some for fodder, and the Farmers knew scarcely any kind of hay on which the cows give so much milk, and when they have eaten it, especially if it is green, the milk also has a nice flavour; nevertheless, it is found that cows give the best flavoured milk when they eat good grass. In very many places here in England they mow their meadows twice in the summer, sometimes also three times, but they seldom drive the cattle in to feed there, either in Spring or Autumn. Nevertheless, the farmers said that the hay of the *aftermath*, **af den senare slätten**, was not so good as that of the first crop.

[T. II. p. 59]. **Bönor.** *Beans* are much sown here, and used as food for horses and swine. They also give them pease for food.

**Krita.** *Chalk.* It is not known to me whether chalk is used for any purpose in gardens, **trågårdar**, but in *hop-grounds* **hummel-gårdar**, it is used by some as a manure, when it is first mixed with other manure.

**Ost, Smör, etc.** *Cheese, Butter, etc.*

Nearly every County (Province) in England has something special, which it produces more plentifully and of better quality than any other county. Thus *Kent* commonly yields better hops and cherries than other counties; *Hertfordshire* better flour, **hvetmjöl**; *Cheshire* and *Gloucestershire* better cheese; *Suffolk* better butter, etc. In connection with this, it is remarkable that the county which gives the best butter, cannot produce such good cheese,

and *vice versa*. The reason seems to be that for either butter or cheese the best and fattest milk is required. Where they make butter they also make cheese, but they use first to churn the butter from the milk, and afterwards they make cheese from the same, which cannot be good, because most of the quality, **mästa kraften**, of the milk is already taken away.

**Råg.** Rye is also sown here in *Kent* by some who partly sell it, partly use to mix it with wheat, to grind and make bread of it. The straw, **Halmen**, is sold to *Watermen*, **Roddare**, and those who go backwards and forwards with boats and yachts to and from *London*, who use to lay [T. II. p. 60] the straw on the bottom of the boat, and on the seat, so that passengers may sit so much better, and not soil or dirty their clothes.

The  $\frac{1}{3}$ <sup>o</sup> July, 1748.

To-day I went with the *Tilt-boat* to *London* to hear whether the Captain and the ship I was to cross to *America* in at once might not be ready for the voyage; and in the afternoon returned with one of the *Tilt-boats* down to *Gravesend*.

**Kritans nytta.** *The use of the Chalk.*

On the fields which lie in the neighbourhood around *Gravesend* they use very seldom or next to never to manure their ploughed fields with chalk; because the soil which is there mostly a mould is already so loose and dry that it ought not to be any looser: but farther away from thence where they have wet, low-lying arable fields, consisting of clay, they manure them from time to time with chalk. All the agricultural labourers, **åkermän**, and Farmers hereabout, agree unanimously in this, that the principal use of chalk as a manure on a ploughed field, is on such land as consists of stiff clay and cold soil,

for it unbinds the clay, and makes it fit to produce crops in abundance. It is also on this account that the Farmers in Essex where there is no chalk to be found, even those who live a long way off, come hither down to the banks of the Thames, where there are chalk-pits, to buy here many loads of chalk, and carry them a long way over land [T. II. p. 61], to manure their arable fields with it, when they consist of a stiff clay. Those who live farther in Kent, and have a similar clay soil, improve it in the same manner, with chalk. In sandy soil chalk is said not to be of any use.

Thus those who live both near and far away from here, avail themselves of this chalk for manure for their arable and grass lands. From Essex, Middlesex, Surrey, and very many other places in the English Provinces which either lie near the Thames, or else on the sea coast, all kinds of provisions, such as wheat, barley, oats, butter, cheese, &c., are carried to London in small vessels. When the same small vessels return home from London, they will not go back empty; therefore they come to some one of these chalk pits, ballast their vessel with chalk which they can have here for a small price, and carry it home, where they either burn it first to lime, before they lay it on the arable fields, or lay it on the fields as they get it. Foreign ships also on the homeward voyage often take from hence a great quantity of chalk with them.

The bases of the walls and banks on both sides of the Thames are made of this chalk, partly because it binds well, and partly because they have no other kind of stones. It is arranged there both in layer and smaller pieces. [T. II. p. 62]. The outhouses in different places were built of bare Chalk. The principal use to which chalk has been put, is, that in several places, they burn lime of it-- of which more a little farther on.

In the Comedy House in London, the *rope-dancers*, **Lindansare**,\* and those who walked on the rope and lines, used to rub their shoes thickly underneath with chalk, so that they should not slip. The rope also was chalked to a certain extent.

The  $\frac{20}{31}$  July, 1748.

*Notes on the Chalk and Chalk hills at Northfleet, and other places in Kent.*

*Northfleet* is a village which lies a short English mile West of Gravesend, on the same side of the river. Here, and all the way to Gravesend, all the hilly banks of the river Thames, and the land around, consist of bare chalk, only that a thin soil lies upon it. Here, near the banks of the Thames, one great chalk pit succeeds another, both of considerable extent, and of great depth. These chalk pits are for the most part quadrangular, and their sides are perpendicular. The depth of these pits from the upper surface down to the bottom is 8, 12, 15, or more, fathoms. They do not belong to one and the same person, but there are several who have shares therein, who are gentlemen living in London, but who have, nevertheless, people here who live near the chalk pits [T. II. p. 63], to see that the work goes on well and properly.

That the chalk has been quarried for many centuries back, can be concluded, besides what one has from old historians, also, partly from the number of the pits, and their very great size and depth, partly from the considerable number of old pits, which are now to a great extent refilled with rubbish and overgrown with all kinds

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\* In the Prologue written by Dr. Johnson, and spoken by Garrick at the opening of the Theatre Royal, Drury Lane, 1747, line 46, 'Here Hunt may box, or *Mahomet may dance*,' refers to a celebrated rope-dancer. [J. L.]

of trees and weeds. Some of the chalk-pits where they were now breaking up and burning the chalk were near the river; others again some musket-shots therefrom; for they had taken away all the more suitable chalk from nearer the river so that there was nothing left, but high heaps, full of the earth they had sifted when they took the chalk, and the soil which had lain upon it together with pieces of flint, chalk, bricks, and other rubbish. In these chalk-pits we had a very good chance of seeing how thick the vegetable soil and the mould is which lies upon the chalk, as well as all the various beds and *strata* of chalk, with what is found in it, etc. At the top of the pits, and upon the chalk, lay the vegetable mould or soil, **matjorden eller svartmyllan**, commonly to a depth of 15 inches, mixed with small pieces of flint, which resembled those which lie on the open plain, and the sun has bleached and made white. The colour of this soil was brown. Yet the soil was not everywhere along the top of the pit the same thickness; for just [T. II. p. 64] as it was 15 inches thick, so it went down in a bow or curve to 4 feet perpendicular depth. Neither was the breadth of such a *sinus*, **vigg**, everywhere the same, for sometimes the upper part was 10 or 12 feet wide, sometimes scarcely 2 feet. The depth of such hollows was also unequal—now more, now less; yet the soil was commonly, beyond and above these pockets, 15 inches.

Below that came the chalk. It was not quite pure at the top, but to some small extent mixed with the brown earth for a thickness of 3 feet.

This mixed chalk thus looked dirty, and was also charged with *pieces of flint* and full of small *Pebblestones*, which, both flints as well as pebbles, exactly resembled those which lay up to the day and were bleached by the sun, which seems to indicate that these parts of the chalk,

which are now 4 feet perpendicularly under the upper surface of the soil-crust, **jordskårpen**, formerly lay up to the day and the sun. We dug into the bank and found everywhere such bleached flint fragments and *Pebblestones*. When these bleached flint fragments which lay in the bank were broken, they often looked inwardly like flints which have been in the fire, but nevertheless, have not been so hard burned as to have run to glass.\*

At times were found at 8 feet perpendicular depth in the chalk itself large spots or pipes, **fläckar**, of [T. II. p. 65] one to two feet diameter, which consisted entirely and solely of such brown mould as lies on the surface, and is the same as we call **svartmylla**. In these "*pipes*" as well as in the chalk around them, were plenty of small *Pebblestones*. We found similar pipes in many chalk pits. In some places they were obliged to throw away the vegetable soil, flint fragments, *Pebblestones*, and other mixed earth, for a depth of 6 feet perpendicularly, before they could get pure chalk to use for lime burning.

I will now give the notes I made in one and another of the chalk-pits in order that I might see *how* the beds lay in them, and what the walls consisted of. In one of these *Chalkpits*, the *nearest to Gravesend*, the strata were in this order:—

ft. in.

1. Highest, and on the chalk was soil, **Svartmylla eller matjord**, which here in colour was mostly brown, about one foot thick more or less... I 0

It was not everywhere of the same thickness, but sometimes went down in curves or pockets, **viggår eller kilar**, in the chalk to a depth of two, three and four feet, but unequal breadths.

2. Next to that a chalky mixture of *Pebblestones*

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\* Of course this is the effect of oxidation. [J. L.]

Ft. in.

and some of the aforementioned soil, **Svartmylla**, principally chalk—one foot, more or less ..... I 0

This chalk was somewhat loose and not so [T. II. p. 66] hard as the perpendicular walls of the chalkpit.

3. Afterwards came a nearly horizontal stratum of bare roots, about  $\frac{1}{8}$  to  $\frac{1}{4}$  inch thick. It consisted of nothing but small roots, the largest of which were the size of a quill pen; but one could not distinguish what kind of roots these had been. They were not particularly rotten. I imagine that they were fine roots of Hawthorn, **Hagtorn**, which had run so far down, and then they had found under this stratum a harder chalk, and could not go farther down in the earth, but afterwards ran horizontally upon the same, and consequently time after time had formed this. What made me think so was (1) that the chalk which lies immediately under is very hard; (2) That I found fresh and growing Hawthorn roots, of the same thickness as recently named, which ran just horizontally among the other roots in this stratum.

4. Hard chalk, 3 fathoms. What it was like further down I cannot say, because the fallen gravel and mould, **grus och mullen**, prevented more being seen below.

In one of the *Chalk-pits* which were close to *Northfleet Church*, the strata of the chalk were in this order:—

ft. in.

1. The soil and vegetable earth, **Jordskärpan och matjorden**..... I 0

2. [T. II. p. 67.] Hard Chalk about 58–60 feet. 60 0  
 Pieces of flint were here and there mixed in it.

3. A stratum of bare flints, laid quite close together—3 to 6 inches thick..... 0 6

	Ft.	in.
4. The hard chalk .....	9	0
5. A <i>Stratum</i> of flints.....	0	1½
The flints here also lay quite close together, but the pieces of flint were very thin, like small thin tablets. There often lay a couple of such thin bits on one another.		
6. The hard chalk .....	18	0
7. A stratum of flints exactly like No. 3.		
8. The hard chalk .....	4	0
And who knows how far down, because the bottom of the pit prevented me from seeing deeper.		
	<hr/>	92 7½

*Note.*—In the chalk bed, **krithvarfen**, below No. 3. some flints only appeared here and there.

In another of these large chalk-pits nearer to *Gravesend* the strata were thus:—

	ft.	in.
1. On the top, soil, <b>Svartmylla</b> , about .....	1	0
but mingled with chalk, that the colour of this earth was very like bricks.		
2. Chalk .....	12	0
3. A stratum of flints, quite horizontal, as if they had been designedly laid level .....	0	6
4. Chalk about .....	30	0
5. [T. II. p. 68.] A stratum of flints, arranged in the same way as No. 3.....	0	6
6. Chalk .....	3	0
7. A bed of flints like the preceding.....	0	6
8. Chalk one fathom and perhaps much deeper, because the fallen earth prevented me from seeing more .....	6	0
	<hr/>	53 6

*Obs. 1.*—That these *strata* of flints consisted only of

one single bed of flint, and not of many piled one on the other. It seemed as if there had been a flat, even, and level plain of bare chalk, whereon someone had spread a *stratum* of single flints so close together that one touched another, and then laid chalk on it.

*Obs. 2.*—The flint which lay in these beds was in some places thicker, up to 6 inches thickness, in other places thinner, even to a thin plate of  $\frac{1}{4}$ -inch thick. Between these strata of flint there seldom appeared any flints in the chalk itself, only some isolated ones here and there. In the chalk, but very seldom, was some little *Pebblestone*, sometimes oval, sometimes spherical.

In the afore-named *strata* of Flints, the flint is surrounded by chalk quite close, as if the chalk had been soft, **blöt**, when the flint came to sink down in the chalk, and afterwards some more soft chalk came to lie thereon. [T. II. p. 69.] These *strata* or beds of flints among the chalk are peculiar. The flint stones lie here as horizontal and as close to one another as if they had been designedly thus arranged by human hands. How did the Flint stone first come there in such an order?

The whole hill, **backen**, near the river Thames west of Gravesend, consisted of bare chalk; but at its base, even with the water surface when the flood-tide is highest, was such a stratum of flints as just described, which lay in the same way, quite horizontal, as if it had been arranged on the dead level. The pieces of flint lay here entirely in the same plane. This flint stratum could be seen at low water for nearly half an English mile along the river bank.

The colour of these perpendicular walls in the chalk-pits is, for the most part, snow-white. In other places it had acquired a yellowish tint, viz.: where there was soil and trees above, from which some wet occasionally trickled down and ran over the sides. In the places

where there are many *lime-kilns*, **kalkugnar**, the perpendicular walls are, from the quantity of coal-smoke, nearly black. In some places where the chalk had newly fallen down, it was full of *black specks*, the size of a small pin's head, just like as if a Lichen had begun [T. II. p. 70] to grow there. In one piece and another were large rust spots, which in some places ate into it to some extent.

The perpendicular sides or walls of the chalk-pits are commonly full of fissures, **springor**, which go sometimes perpendicularly, sometimes horizontally, and cross each other at right angles. The width of such a fissure is not always the same, being sometimes so narrow that one can scarcely thrust in the blade of a knife, but sometimes they are wider, that one can easily get in a finger. I cannot just say of which kind, perpendicular or horizontal, there occur most, yet the horizontal seem to be the most numerous. When I call the fissures perpendicular, it is not to be understood that they were so according to mathematical rules, but they stood sometimes exactly perpendicular, sometimes nearly so. The same remark applies to the word horizontal.

In the old chalk pits they had in some places dug large holes like caves, **hvalf**. Those who lived close by said that they thought they had been in former times used as cellars, **källare**. The cave within had not taken any particular injury from time, nor had the walls; yet it seemed that pieces of chalk had from time to time fallen down from the roof. The chalk in these old cellar walls, which were perpendicular, was full of fissures which ran both perpendicularly and horizontally, and even obliquely. I mean [T. II. p. 71] by oblique that which is a *medium* between perpendicular and horizontal, or tolerably near thereto. These oblique fissures were everywhere very few, and not nearly so many as the others. The distance

between the horizontal fissures was nothing less than the same throughout; for when the one *stratum*, if I may so call it, was thick, the next was often quite thin.

In the old cellars the distance between the planes of the bedding was mostly 6 inches, sometimes, however, more; often 1 inch, and sometimes only half an inch, or a narrow strip, **en smal rimsa**. Nor was one and the same stratum always of the same width between the fissures; for although it commonly maintains the same width, it sometimes happens that when it has been for a time of one and the same width, it then by degrees grows narrower, and at last terminates in an *angulum acutissimum*. Neither did the fissures always behave the same way: for *now* a fissure might run exactly horizontal, as far as the face of the chalk-pit went; *now*, just as it had gone for a little horizontally, it stood obliquely, and another horizontal fissure began in it, 1, 2, 3, or more inches, either above or below, and so on.

When one gently drew out a piece of chalk, which lay between two horizontal fissures both [T. II. p. 72] the under and upper sides thereof were a *planum*, or plane without lumps or projections, and commonly of a little darker colour than the chalk within, a sign that air and water had entered the fissure. The coal-smoke which comes from the limekilns, which occur in nearly all these pits, is however able to have caused the same dark colour. After running for some time straight as a line horizontally, it bent off and ran obliquely.

Among the horizontal joints or bedding-planes, there were commonly some master-joints, which mostly ran the whole way across the face of the quarry, and were larger than the others. The distance between them varied—2, 3, or 4 feet, seldom less than 18 inches, but the space between them was often divided by small horizontal fissures.

Neither are the perpendicular fissures of the same description throughout, for sometimes they go in a straight line right up the wall. Sometimes when they have gone a certain distance, they stand obliquely, and then another begins a little on either side, and runs up in a straight line. The width of such a fissure behaves in the same way, as has been said of the horizontal ones. The distance between the perpendicular fissures, as with the horizontal ones, is not uniform, but sometimes wide, sometimes narrow, often only 1 inch and even less; but sometimes 2, 4, 6, 8, and 10 feet wide.

[T. II. p. 73]. These perpendicular fissures, or 'joints,' commonly preserved a certain direction, for they mostly ran from E. to W. and from N. to S., or about, it might be, a slight curve from W. to N. and E. to S., as well as from S. to W., and from N. to E. But this was so slight, that it could scarcely be noticed. Yet there were at times some seen which departed from this rule, and ran for example from S.E. to N.W., from N.E. to S.W., and so on. Nevertheless, this curvature happened seldom enough. They commonly lay, as was first noted, and this in chalk pits, which were a whole English mile from each other.

When pieces of chalk were drawn out of the rock, their sides facing the perpendicular fissures were quite plane, and as smooth as if they had been cut even with a knife drawn along a *rule*.

The chalk walls which have been longer exposed, and on which both the sun, air, and rain have operated longer, are far more full of perpendicular, horizontal and oblique fissures, than that which is newly quarried. At least the former could be more plainly seen: for an old chalk, which has been longer exposed, is nearly cracked all to pieces, while in a newly fractured surface one can with difficulty see any cracks.

Sometimes in the larger fissures it is seen that thin and flat bits of flint, like thin pieces of Schist [T. II. p. 74], had filled up the fissure. Can it have been formed there, after the chalk had been so cracked to pieces? Thus, it is evident, that chalk rocks have their fashion or quality of cracking to pieces, just as 'granites,' **gråbårgen**, with us.

When the chalk has lain its time in the open air, under sun and rain, there are often very small holes, on the upper surface, so that it becomes as it were cellular. The depth of the holes is, however, seldom over 1 or 2 geom. lin. =  $\frac{1}{12}$  or  $\frac{1}{16}$  inch.

The flints which were found in the chalk had no certain shape, but were nearly all formless pieces, just as when one smelts metals or some ore, and lets it run on the ground in any chance form. The largest pieces of flint are about 2 feet long, though one seldom sees such large ones. Most are about 9 to 12 inches. Nearly all flints, here in the chalk pits, are black; though some lightish pieces occur here and there.

On the banks of the river Thames there lie in some places plenty of flints, but although the strand for six hours stands under water, and for the next six in the open air, still they have not suffered any other change on that account, than that some are externally of a white colour, or also sometimes slightly inclining to blue, such as flints are wont to be when they lie on the hills in the open air, and the sun shines on them and bleaches them. Otherwise most of the flints here were as clean and black, when they were broken, as those which are newly taken out of the solid chalk. [T. II. p. 75]. The flints sometimes had on their surface, as it were, a rust-eaten or ochre-coloured crust, and in such flints rust-eaten places often occurred. The figures were such as before described, as those assumed by an ore, smelted and run on the earth

as it would. The pieces were commonly oblong, and at the same time full of lumps and irregularities. They also frequently resembled fingers, feet, pegs, human bodies, part of a hand, a goat's-horn, a small calf-horn, etc. Inside they were commonly black, but also frequently more or less full of lighter spots.

The *Heterogenea* and foreign or less common things, which are found in these chalk pits, either in the chalk or the flints are in particular these:—

1. **Strålfinta**, as I call a kind of stone which lies like a sponge upon the flint, is broad and flat, consists of parallel threads hard-petrified, which run perpendicularly to its flat side, exactly like the *Amiant-like Strålgips*, [*fibrous gypsum*] in Prof. Wallerius's *Mineralogia*,\* p. 55, only that this is somewhat denser. In colour it is white or light grey. Still it is a kind of flint, because it strikes fire with steel. It lies not only in the flint, but also sometimes in the chalk.†

2. **Musselskal**, *Bivalve shells*, occur firmly fixed in corresponding cavities in the flint, as well as in the chalk.

3. Crystaller, *Crystals*. Often when one breaks a flint to pieces, there are found inside small rock crystals, **bärg crystaller** [T. II. p. 76] closely packed. There is generally an empty space left with them.

4. **Klotrunda flintbitar**, or the so-called *chalk-eggs*. These are frequently found firmly united to the flint. Externally such a chalk, or, more strictly, flint-egg, is covered with a white chalky crust of the thickness

\* Wallerius (Johann Gottschalk). *Mineralogia*. Eller Mineral Ricket indelt och beskrifvit af J. G. W. *Stockholm*, 1747, 8vo. The first of a long series of Mineralogies. [J. L.]

† **Strålfinta**. Thin *plates* or *scales* of fish exhibiting a transverse fibrous structure are common, especially in fragments, in the upper chalk, and in the flints. [J. L.]

of a half *line* =  $\frac{1}{8}$  inch; but when it is broken one gets to see that it consists mostly of bare flint. They are generally spherical, **klotrunda**, but sometimes slightly oblong, sometimes they are quite solid and bare flint, but sometimes hollow, when in the centre there lies a little chalk, either attached to the flint, or loose, so that when it is shaken, the chalk is heard striking against the sides within. From such internal space there is no hole or passage to the outer periphery, but the flint is solid round about the hollow space within. These are as small as swallows' eggs or bullets, and also as large as cannon balls.

In some chalk pits the men used to sit and flake the flints there gathered into small pieces to sell to travellers and others to strike fire with.

[Omit 8 lines on p. 76 and 5 lines on p. 77.]

[T. II. p. 77.] Some old chalk pits are now left desert, and stand full-grown with all kinds of trees and weeds. Among the trees are particularly Privets, Viburnum, Guelder-Rose or Wayfaring tree, Thorn-bushes, *Cornus fæm.* [*Cornus sanguinea*, *Cornel*] in very great abundance.

[Omit 4 lines.]

When the sun shines, while one remains in a chalk-pit, it costs the eyes a good deal to look at the white chalk.

Rabbits, **Caniner**, had their holes and dwellings in several places in the loose fallen earth and chalk, where in the evenings they are seen in great numbers.

**Tattingar.** *Sparrows* had their nests in the excavated caves.

In one of the chalk-pits was laid out a beautiful orchard full of different fruit trees, together with all kinds of kitchen garden plants and vegetables.

In the chalk-pits near *Rochester* which lay  $1\frac{1}{2}$  Swedish

mile from those just described at Northfleet, the chalk-walls had entirely the same structure as those described above, viz., that they went in similar horizontal [T. II. p. 78] and perpendicular fissures, contained the same *heterogenea*, had precisely similar *strata* of flints, laid close to one another, and 1, 2, 3, or more fathoms of chalk between every such *stratum* and the next. In the chalk between these *strata* there were also some flints here and there.

*How they burn lime from chalk at Northfleet and elsewhere  
in Kent.*

I have before remarked that all the country around *Northfleet* consists of bare chalk, in which they have dug deep pits and taken out of them both chalk and flint, partly for sale abroad, and partly to burn lime from the chalk. The method of burning lime here practised is the following, which I will relate in the order in which it happens:—

They break off with a crowbar large pieces from the sides of the chalk-pits, and cause them to fall down to the bottom of the pit. They begin this quarrying at the top of the pit, after they have first removed the mould and earth, which lies upon the chalk, and so continue downwards right to the bottom; but not more at one time than will suffice for burning for one or two weeks. All the other walls in the chalk-pits which they have left off quarrying are mostly perpendicular, but the walls where they are working are sloping enough, so that they can go up and down the same frequently. The pieces which have fallen down, and are still very large, are hewn asunder into smaller pieces with an iron pickaxe.

[T. II. p. 79.] After that, the chalk, so reduced into somewhat smaller pieces, is laid on a lump or block of chalk which they have made for themselves, and with

a pick, which is like such as we use to pick millstones with, only that the edge of the pick does not go parallel with the handle, but at right angles to or across the shaft, as in a scarf-cutter, **skarf-yxa**, they hack the chalk into still smaller pieces, so that the largest bits of chalk are seldom larger than a clenched fist. The pick is about two inches wide in the blade. The flints which are found among the chalk are collected and laid in a heap, to be preserved and afterwards sold. They next have a 'Riddle,' 'Fiddle,' or sieve, **et Rissel**, of about 30 inches diameter, whose bottom is made of small iron wires, the 'bars' and 'slashers,' bound round with very fine iron wires, or 'whippings.' These iron wires, *i.e.* the bars and slashers, are set as usual in the sieve so as to make it full of four-sided holes or squares. Every side of such a square mesh is  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , or 2 inches. This 'Riddle' or 'Fiddle,' **Rissel**, was held by one person, while another with a shovel cast the chopped-up chalk therein, when it always happened that the pieces which were smaller than the hole in the bottom of the fiddle passed through and fell out, together with the chalk which in the process of chopping had been reduced to powder. The pieces of chalk which were left in the fiddle were cast out into baskets, which were carried to the limekilns to be burned to lime; but the smaller pieces which fell out through the holes of the fiddle [T. II. p. 80], together with the fine meal, was left lying on the bank, and was not carried to the lime kiln. The reason why they will not use this is said to be that it puts out the fire in the limekiln because it is so fine.

**Skåfveln**, the shovel which they took up the bits of chalk with, was slightly concave, exactly like such shovels as are used in granaries and salt-houses, only that it was somewhat broader. The breadth, or *latitudo transversa*, of the shovel blade was 22 inches; *latitudo perpendicu-*

*laris*, or the length, was 10 or 11 inches. At the bottom and round the edge it was shod with iron.

**Korgarna**, the baskets which the small pieces of chalk were cast into, and in which they carried the chalk to the limekilns, were made of willow boughs or shoots, in shape like a large Goblet, or Beaker, *Pocal eller Bägare*. Their height was 13 inches, the diameter at the base rather over 6 inches, the diameter at the top 15 to 16 inches.

After they had filled the baskets, of which there was here a very large number, they were carried by women to the limekilns, where there was a carl who received the basket, cast or tipped the bits of chalk out of it over or on to the limekiln, yet in such a manner that he slung them with such direction that they did not come to lie on each other, but were spread evenly about beside each other.

The limekiln was built of brick. When it was empty, and one looked down into it from above, it was in shape like a beaker [T. II. p. 81] or goblet, as round as if it had been drawn with a pair of compasses, but narrow at the bottom and widening upwards. The internal diameter of the kiln at the base or bottom was 66 to 72 inches, but at the top at the surface of the ground the diameter was 13 feet, some a little more. The perpendicular height inside from the bottom to the highest rim, 22 feet 6 inches. Down at the bottom the kiln was externally built perpendicular for a height of 6 or 7 feet, above which level its shape afterwards on all sides looked like a parasol. They had there laid horizontally on the top of the perpendicular wall, beams, or balks, on which they had set other smaller balks, which all sloped outwards like a parasol. Immediately within the balks were laid large lumps of chalk, and immediately inside these the brick wall of the limekiln, which leant against and was

supported as it widened out by these closely-laid, parasol-shaped balks, or struts; for if these struts had not been there, the upper part of the kiln would not have been able to stand. These balks so arranged were fastened by their upper ends to other horizontal balks, which were shaped into a frame adapted for that special purpose, whereon a platform was made on which they could go and walk around the kiln, and carry chalk, coals, and anything that was necessary for the same. Down at the bottom the limekiln had four openings, or mouths, **ugns-munnar**, through which the fully burned chalk could be taken out, and by means [T. II. p. 82] of which the wind always found access to play in and heat up the coal in the kiln, so that there was always a strong draught.

Each kiln-mouth, **ugnsmun**, which was square, was 30 inches broad and 2 feet high. The perpendicular part, *i.e.*, the lower part of the kiln, was externally an octangle in this way, that starting with one of the sides that stood perpendicular, the oven's mouth was in the next, in which the upper part of the side stood quite as far out as the perpendicular face, but afterwards went more and more in, the lower it got, till at the bottom of this inwardly sloping part was the kiln-mouth. They had in most cases built a screen of boards round the kiln with two entrances, one on each side, to prevent the too excessive blasts of the wind. This screen was on the outside of the kiln, for on the other side, the bank with its perpendicular sides, against which the lime-kiln was built, performed the same service. The bottom of the bank where they were now getting the chalk was horizontal with the upper surface or the edges of the lime-kiln. When they burn chalk to lime in this kiln, dry brushwood or sticks are laid on the bottom to light the fire with, then a thin stratum of coal, then a stratum

of the broken pieces of chalk, again a thin stratum of coal and so alternately until the goblet or beaker-shaped kiln is full. The fire is lighted at the bottom, and spreads itself more and more upwards according as the coal down below becomes burnt up. [T. II. p. 83.] The chalk is generally burned to lime, although it holds together in the same bits as it was when it was put in.

As the chalk becomes full-burnt, the pieces are taken out down below, at the bottom of the kiln, through the above described kiln-mouths, when the chalk which is above, successively sinks down into its place. And that this may proceed with more certainty, they have a long either single or forked fire-poker, which they thrust here and there down into the kiln from above, and stir about, when the bits of chalk sink down all the faster. The bits of chalk are shovelled out of the fire with the above described broad shovel. The fuel they use for this purpose is only and solely coal, except that when they first light up a kiln they have at the bottom fagots to light up with, because the coal will not otherwise so easily take fire. A little way from the kiln lie large heaps of coals, but before they are used they are broken with an iron hammer into quite small pieces, little larger than the end of a little finger. A great part is as small as dust. The carls give as a reason that they burn better and more evenly in consequence, and do not become caked because a thin bed of such is sufficient to heat up and burn the stratum of bits of chalk which lies upon or under it. As soon as the carl has broken into very small pieces as much coal as he considers to be sufficient for a certain number of baskets, he takes some water in a bucket and throws it [T. II. p. 84] thinly over the same fine-broken coal, partly by this means to prevent them from being blown away by the wind, since they are now in part like mould, partly also because they will heat stronger when they come thus into

the kiln. Thus prepared the coal is carried by women in the above-described baskets, and is set around the sides of the kiln, where the carl takes them, and throws them into the kiln as he finds necessary.

No one must think that the beds or strata of these coals in the lime-kiln are so thick that when they have laid such a bed upon the white chalk, the chalk can be no more seen, but only black coal. By no means, these coal beds are both thin and very porous. Two or three or four such baskets, as have been before described with the chalk, suffice for a stratum up at the highest edge of the kiln, where it is widest. In the same way it is true of the stratum of chalk, that the bits of chalk do not lie so close, but that one can nearly everywhere see the bits of coal between them. Someone may perhaps think that the lime which is burned from this chalk must lose much of its white colour, by reason of the black coal which is mixed alternately with it; or also may enquire whether the coal is afterwards separated from the bits of chalk? The answer is that the coal is not separated from the bits of chalk after the chalk is burned, nor would it admit of this, because, as was said before, the bits of coal are quite small, and a great part [T. II. p. 85], of them like mere dust, but they remain and are blended together with the chalk; but it ought to be noted that when the coals are burned they have lost all their black colour, and acquired a light one, so that the chalk as far as regards its whiteness takes very little harm on that account. Besides that, they assert that a lime burned from chalk, which is blended with powdered coal ashes will be much more binding in the walls, than all other lime-mortars, which quality they attribute to the coal-ashes.

At every kiln there are six persons, three men and three women. Two of the carls have the charge of breaking the chalk loose, and of hewing it into small

pieces, as well as of lifting the baskets on to the women's shoulders; but it often happens, nevertheless, that the women also get helping to hack the chalk into small pieces. Both the carls and all three women help to fill the baskets with the bits of chalk, when the carls commonly *screen* the bits of chalk in the fiddle, and the women throw them into the baskets. The women are obliged, almost alone, to carry the baskets on their heads and shoulders from the place whence the chalk is taken to the lime-kilns. Likewise they are obliged to carry coal-baskets from the place where they were filled to the lime-kiln. The third of the three carls is constantly at the lime-kiln, where he takes the chalk baskets from the women's heads and shoulders, and throws the chalk into the kiln. Similarly he throws the coals in their turn into the kiln. In short, he performs all the duties which are carried on at the lime-kiln itself, besides that he helps [T. II. p. 86], when he has time, to break up the coal into small bits, **at boka sönder stenkålen**, etc.\* Every woman always carries three baskets each time, namely, she has a piece of board of about 8 inches broad, and about 1 foot long, on which is a rope or band, one end of which is fastened to one end of the piece of wood, and the other to the other. This band is laid by a noose over the upper part of the head, so that the piece of board comes to lie across the shoulders, when one basket is set to rest upon the piece of board, and the other two beside it on the head, whilst the woman inclines her head a little as she walks. On the head they have an old man's-hat, and under the piece of wood and the band a bunch of hay, that the piece of wood and the cord may not injure the back.

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\* **Boka**, see *Glossary to Studies in Nidderdale*, p. 240, s.v. 'Bukker,' also *Stud*, p. 28. [J. L.]

When these lime-kilns are once lighted up, they are said to burn the whole year night and day, only being allowed to go out during Yuletide, on the principal feast days. But as soon as these are past they are lighted up new, and are continued in that state night and day till the next Yule.

The chalk which is laid in the morning in the kiln to burn, is in it, sometimes two, sometimes three days, before it passes through the kiln, and becomes full-burned. For the most part they reckon three days for its burning. While it is thus passing through the kiln its burning goes on, not only from the beds of coal which lie next to it, but [T. II. p. 87] also from the brickwork in the kiln, which is very hot from the long continued burning. The heat of the kiln is so strong that pieces of flint which have accompanied the chalk fragments into the kiln are converted into a white glass.

As soon as the chalk laid in the kiln is full-burnt, and has got through the whole kiln, so that it is now at the bottom, it is taken out of the kiln with the above described shovels. The ground outside round about the lime-kiln near the kiln-mouths is [paved with] broad square flat bricks, **tegelstenar**. The burned bits of chalk are laid in such places as are in the *skeeling* or shelter, **skjulet**, which is round about the kiln, and when they have got all the corners, **vrår**, so full that no more can be accommodated there, it is carried thence in large carts, **kårror**, down to the banks of the Thames, which runs close by, where it is laid unslaked in vessels or barges, and is carried up to London to be sold. Otherwise when they take a portion of this burned chalk, and throw a little water upon it, it begins by degrees to smoke and becomes so hot that one cannot hold the hand upon it. At length the bits fall to pieces into a fine meal, exactly in the same way as happens with another unslacked lime from limestone.

When the chalk is full burnt, it is considerably lighter, than it was before, and full of small fissures, like as when one has laid potters'-clay in the fire. The colour on the surface is greyish, which without doubt is due to the coal and smoke. If such a piece be broken asunder, it is not [T. II. p. 88] so white within as it was while it was still unburnt.

Pieces of flint of 5 inches long and 1 inch diameter, which have come to be cast with the chalk into the lime-kiln are burnt through, and snow white all through so that they look like white Dutch ware, **krus**.

The burned pieces of chalk are so cracked to pieces and full of cracks that they fall into small bits when one takes hold of them.

The parts of these pieces which have been against the cracks are also darker in colour than that which has been midway between the same cracks, because some coal smoke has without doubt penetrated into the cracks.

That the slacked lime might not be spilt when it is thrown into the barge, they had a trough of boards knocked together, of 4 or 5 feet wide, and about 8 feet long, which they set sloping against the side of the boat and tipped the bits of chalk out of the barrow into this trough, when they fell down into the vessel. Such a trough or slide is always used at boats when unburnt chalk is loaded in them.

I have said before that around all these kilns on the lower side is built a screen of boards, partly to prevent the wind from blowing too strongly on to the kiln, partly and principally that those within it might be able to keep the burnt pieces of chalk, which they take out of the kiln before they are carried down to the barge, **Fartygen**, or yacht, **Jackten**, which conveys them to London. This screen is in fact of boards, but its foot is in some places to a height of 3 feet of brick. For a roof over [T. II.

p. 89] this skeeling is the *altan* or balcony, as I may call it, which goes round about the upper edge of the kiln. Between the kiln-walls at the bottom and the screen, **skrank eller plank**, the distance is commonly 6 feet. The screen has two openings, one on each side of the kiln, where they load the burned bits of chalk on to the cart.

The limekiln is always built close in to the place where they break the chalk, that they might not have too long a distance to carry the baskets and the chalk, therefore there are seen standing here and there unused old limekilns, which they have left since they had quarried away all the chalk near them, and it began to be too far to carry the chalk-baskets.

The women receive each about eightpence a day, for which they work exceedingly hard, for they mostly labour like slaves.

They said they were paid in this way, that a woman gets one penny when she has carried sixteen baskets of chalk to the limekiln, and for this penny she had also broken up a good deal of chalk. The man who had charge of them, confirmed what the women had said, that they receive one penny for sixteen baskets carried, at which rate they can earn twelve, fifteen, or eighteenpence a day, according as they are industrious. The men, **Karlarne**, get either nine or ten shillings a week. Food and everything they must find for themselves.

A little way from *Rochester* on the Gravesend side were several Chalkpits, out of which they took chalk, which was loosened with crowbars, **järnstörar**; hacked still farther to pieces with iron-hackers, **järnhackor**, or picks, and was finally beaten [T. II. p. 90] with iron pounders, **järn-knöster**, into small lumps and bits, which were afterwards carried to the kiln, where they were burned to lime.

After they had pounded a heap of chalk fragments into smaller bits, all the pounded chalk was not carried to the limekiln, but they laid it first in a coarse 'fiddle' and screened away that which had gone to powder, which they did not take. The flints which were found in the chalk were separated therefrom, and were cast together in a heap, to reform the ground, as they were obliged to do. The limekilns were here built entirely underground, so that the upper edge of the limekilns was horizontal with the surface of the ground. The kilns were, however, here one-third part smaller than those which are at *Northfleet*, and getting on for half the size; but in other respects nearly of the same form, excepting that at the bottom there is only one draught-hole, **drag-hâl**, instead of several as in those at *Northfleet*. They also went through at once down to the same draw-hole, like a tar-mill with us in Osterbotten. In other respects, the walls are all built of brick. The Carl said that the chalk, which he lays in the kiln the one morning, can be ready burnt to take out the following morning. The lime they burn here is not carried to London, but is all used up at *Rochester* and in that neighbourhood.

The chalk is burned, in other respects, here in exactly the same manner as at *Northfleet*, viz., alternations of coal broken into very small pieces, and bits of chalk, etc.

*The 1st August, 1748.*

[T. II. p. 91.] *Sain Foin* is much used here in Kent. Most people here call it *Cinquemoil* which they have corrupted from *Sain Foin*. When it is once sown, it can stand ten or twelve years, without requiring to be sown again; for which time they can mow it every year. After the time when it begins to be somewhat thin, so that it does not seem to be worth while to mow it, they do not at once plough up the ground it grows upon, but let it

remain two, three, or four years, during which time they give liberty to cattle, but in particular sheep to go and bait upon it, by which means the land also becomes manured. They are obliged to proceed thus with it, because here in Kent there is very little meadow-land and pasture for sheep. When they do plough up such land it is commonly sown the first year with Pease, but sometimes with another crop, as is found necessary.

For horses *Sain Foin* is an excellent food both in summer and winter, but if it is given to cows, after it is dry, they eat no more of it than the flowers that lie on the top, nearly all the rest they reject and trample under foot. It has been attempted to sow it, at some places in *Essex*, from the seeds which they took from hence, Kent, but it has not by any means flourished, but grew so poorly that it has not been worth while to sow it again. The soil is sand and gravel, at the places where it was tried.

*Clover.* In this district also much clover is sown. Spring is commonly the season when it is sown, but they do not get to mow it before the next [T. II. p. 92] summer after that. It is hardly ever sown more than two summers in succession, and very often not more than a single summer, after which they commonly leave it to the next summer after it is mown before turning in the sheep to feed upon it. As was said above, it is necessary to cause them to be closely crowded on the pasture, because the farmers then at the same time have the advantage, that the fields are manured when the sheep go in to pasture there. The cows eat the clover greedily, both fresh and dry, stalk and all.

*Vicia Sativa.* Similarly, in many places hereabout they sow tares or *Vicia Sat.* as food for cattle. The principal use to which it is put, is that they cut it up green at this season of the year, and give it to horses at home, who eat it very greedily. No more of it is left

standing on the land than proves necessary for collecting its seed for next year, for this is a *planta annua*, which must be sown every year, and that in early spring so that it can by this time, August, be taken up as food for cattle. At this time of the year, **tid**, they here keep their horses at home in the stable for the reason that out in the inclosures they are so much troubled with flies and other insects.

**Rofvor**, *turnips*. They also sow turnips here as at other places in England. The season when they commonly sow them is just about this time. I was to-day in a large *inclosure* in the afternoon, which in the morning had been sown with turnip seed. The whole *inclosure* was laid out as turnip land. The land lies fallow all the summer before this time. At the beginning of July they carry [T. II. p. 93] the manure out on to this land (see T. I. p. 483 *orig.*) which manure is mostly *straw-litter*, **halmbyssie**, such as is collected in the farm-yard, **fä-gården**, and has there lain under the cattle, and has become mixed in with their dung. After this has been carried on to the fields and laid there by the load, **lasstals**, it is spread out as soon as possible, and is ploughed down. After that the field is harrowed and rolled so that it becomes quite fine. The principal reason why they sow such a quantity of turnips here is that they feed and fatten both sheep and oxen with them in the winter.

**Åkerbruket**. *The Agriculture*. The places which they make up their minds to sow with wheat in autumn are such as are either now lying fallow, or also where beans are now growing, which they plough up in the autumn and sow with wheat.

*The 2nd August, 1748.*

**Källor mycket rara här på orten**. *Springs very rare in this district*. I have often before made the remark

that spring-wells and gushing springs with becks flowing from them, **springkällor med springåder och flytande bäck från dem**, such as occur in abundance in Sweden, are sometimes scarce at the places I had previously been to in England. I have also made the same observation here in Kent, and also in the part of Essex which lies opposite Gravesend. The country on both sides consists of high banks and hills with deep dales between, and in some places, particularly on both sides of the river Thames, large low-lying plains, so that many from all this might conclude that in the valleys between the hills and on the low plains immediately under the hills, there would be found an abundance [T. II. p. 94] of running streams, and a plentiful supply of springs here and there, but nothing is more rare. During my visit to Gravesend I walked tolerably well over the country around on all sides, was also twice over in Essex, and there walked assiduously round the country, but for all that I had not the good fortune to get to see a single spring, **källa**, with running water, nor a single running stream, more than immediately west of *Northfleet*.

All the running water I saw here was in the river Thames, the river Medway, which passes by Rochester, and the little beck west of Northfleet.

An Englishman was asked whether there are any springs here. He immediately answered yes, and in addition to that they are beautiful; but when he comes to point them out, it is nothing else than a deep well down in the chalk, which he says has a spring feeder, because the water therein cannot be emptied out, although it lies some fathoms' depth down.

It is certain that the country is here very pretty, to such an extent is this so that through the planting of hedges round all the enclosures it everywhere resembles a garden. Besides this, the continual variety of high

knolls and deep dales without seeing any stones larger than a boy can throw, greatly increases its charm, but nevertheless, the pretty effect of crystal clear running becks, and their murmuring sound in the green dales is much missed; such a joy no one here knows of. I am here speaking about the places I was at, for in several other parts of England there is an abundance of beautiful springs. [T. II. p. 95.] All the water which the inhabitants require for themselves and their cattle must be collected either in deep wells in the chalk, or in large dug-pits and *ponds* in the inclosures, where the rain water stands, and serves for the cattle, which there pasture, to drink, for which purpose also such ponds have always very gently sloping sides, that the cattle may be able to go down to them and drink. But someone might ask the reason why there are here so very few, or in short, no springs and becks, where, nevertheless, the country consists of banks and hills, with deep valleys, though it sometimes rains here heavily? I answer that I cannot just understand this, but I have made the following observations:—

1. They have everywhere here deep wells in the chalk, both near the Thames and far away from it, wherein is an abundance of water which never fails.

2. The surface of the ground consists of a loose mould, on which one hardly ever sees any water stand, however it rains, but it sinks in at once, and the upper surface is soon dry, at least on the top.

3. When they have dug the pits so deep, that they are some way down in the chalk, the water stands in them, and remains for several days before the sun succeeds in drying it up.

4. When one digs never so little into the chalk, where it forms a hill, it is quite humid and moist within, and the deeper one digs so much more humid and wetter it is.

5. In the chalk pits the chalk is found not to lie quite dense [T. II. p. 96] and solid, but is full of both horizontal and perpendicular fissures.

6. If one goes early in the morning into a chalk pit before the sun has dried up the dew, or also on to a field where pieces of chalk are lying, one will find that the chalk is slippery, and almost wetter than any other kind of earth.

From all these observations it seems to follow that the rain and the snow which falls cannot stand in the surface soil because it is too loose ; but it goes down into the chalk ; that the chalk has a property of absorbing moisture ; that the water filters deeper down, through the many perpendicular and horizontal fissures in the chalk : that very few becks could, on that account, be found on the chalk hills, because they, as it were, swallow up all the water before it has time to collect so as to form a beck ; that crops and pease which grow on the chalk hills, for that reason, do not require to be drained, because the chalk, which lies below, probably absorbs the dew in the night, and in the day is dissolved by the water which lies down in the fissures.

From this want of springs and flowing waters it happens that the cattle, at times in the summer when it is a long and severe drought, come to suffer much. They must often then be driven some miles before they can be watered. I was informed that in some places they had no other water to use for cooking than such as was collected in the chalk pits, which is white and thick, and often so full of small insects that they are obliged both to filter and boil it [T. II. p. 97] first, before they dare use it.

*Sain Foin.* I have said above that most of the inclosures which here in Kent are used as meadows, were sown with *Sain Foin*. I saw to-day places where *Sain Foin* had been cut, harvested, and carried home this year,

but as no cattle had been turned in to feed there, it had already so advanced in growth since that time, that it was now 9 in. high, with an abundance of soft and tender leaves striking out from the roots and stalks which, moreover, stood very thick, so that I believe that they might be able to mow it again this summer.

*The 3rd August, 1748.*

*Salicornia, dess nytta, Samphire* its use. *Salicornia herbacea*. Linn. *Flor. Svec.* I.; Rai. *Syn.* 136; grows on the low-lying banks of the Thames, which at every flood tide are overflowed by the salt water of the Thames—for one ought to know that the water in all this part of the Thames which is at and below Gravesend is very salt, because the flood which happens twice a day (of 24 hours) drives the salt water up from the sea. The English women pluck this herb at this season, and pickle it, **insylta**, which is done as follows: The herb is taken entire as it grows, but broken off at the roots. As much of it as is required is thus gathered. It is well washed in cold vinegar, one stalk and plant after another, that all the dust and dirt which had clung to it might be rinsed off. They do not wash it in water [T. II. p. 98] because if it is afterwards laid in vinegar (as it should be) the water which remains firmly lodged in the plant, dilutes the vinegar, so that it becomes weaker, whence it becomes clouded and full of mildew, and thus becomes altogether ruined. After they have thus washed the stalks or the plants clean in vinegar, and laid them on a board for the vinegar to run off a little, they take a stone jar, **stenburk**, of the size which they have enough Samphire (*Salicornia*) for, lay the plants therein till it is full, pour in the best and quite pure vinegar, just so much as to cover the herbs in the pot. Thereupon they take some mustard, rub it down to a perfectly dry powder, because

it has no efficacy, **kraft**, or at least is not so strong if it is unground and entire. They then cut a clean linen cloth to the size round and diameter of the jar inside, and then another linen cloth of the same size, hem them round the hedges to a round bag, fill it with the ground dry mustard so that it is only as thick as the blade of a knife; then, not only sow up the hole through which the mustard was put in, but also sow a quilted network of cross-lines upon the face, just as one stops a quilt or bodice with 'hards'\* and cotton, that it may lie even. This bag, **påsen**, so filled is laid upon the *Samphire*, which not only presses it down so that it all lies in the vinegar and none above it, but also prevents it from forming any mildew on the surface. Afterwards they have a large Chamois-leather, **sämsk-lapp**, which reaches well over the jar. This is laid over the jar and tied tight down that the virtue, **kraft**, of the vinegar may not be lost. [T. II. p. 99.] They let it stand so for 14 days or a month, and then look whether the *Samphire* still retains its green colour, which if it does then they take some *pinks*, **näglikor**, *Dianthus Caryophyllus*, *L. Clove Pink*, ginger, **Ingefara**, pepper, and mace, **muskotblomma**, half an ounce of each, and half an ounce of Jamaica pepper (allspices), boil them together, let them cool, and then lay them in the jar with the *Samphire*, tie it up again, after replacing the mustard bag as before said, and leave it so to stand till they require it. But if, as commonly happens, they see that the *Samphire* has not kept its green colour, but has changed to a yellow colour, they take it together with the vinegar it lies in, lay it with the afore-named spices

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\* 'HARDS of Flax and Hemp, the coarser parts separated from the fine stuff.' Bailey, *Eng. Dic.* 1736. 'HARDENS' or 'HARDEN,' *hemp, hemp-fabric*. &c. Lucas, *Stud.* 1882, *Glossary* p. 257. [J. L.]

in a metal saucepan, and boil all till the Samphire which had a yellow colour when it was put in acquires a beautiful green colour, in respect of which be it noted that it is stirred from time to time while it is boiling. As soon then as it has got its former green colour, which commonly happens in the course of half an hour, although sometimes more or less, they take it off the fire, pour all together into the jar, lay on the mustard bag, tie the Chamois leather over, and preserve it till it is wanted.

They often make them in this way. After they have rinsed them in vinegar when they are newly plucked, they pour pure vinegar on them, and boil them at once with the aforesaid spices; upon which, it is to be noted, that although they are green when they are laid in the metal saucepan, they nevertheless become quite yellow as soon as they are warm, but they must be kept boiling till they regain their former [T. II. p. 100] green colour, after which it is proceeded with according to the previous instructions. They do best of all if they are preserved in a jar in a somewhat warm room. They are used in the autumn and winter season with steak and other food, in the same way as pickled walnuts or cucumbers, without anything else being added to them.

*Obs.*—The vinegar which they are rinsed and washed in is thrown away after they have been washed.

**At insylta Champignonier.** *To Pickle Mushrooms.* The women pickled them thus: they plucked them whilst they were still quite small, when they keep best, boil them in very salt water about ten minutes, take them out and lay them in a linen cloth to dry. Afterwards they take vinegar, whole pepper, and mace, **muskotblomma**, boil it all together, and also pour a little white wine into it. When it has boiled a little they take it off, let it cool, lay the mushrooms after they are dry in a glass jar, pour the vinegar and the other spices on to them so that it

covers them over, then they have a Chamois leather which they tie over the glass so that it is quite closed, and use it when it is wanted. The large mushrooms are not pickled, but are stewed while fresh. The small ones which were pickled were of the size of finger's-ends, and consisted of the entire *pileus* or hat, and the *pedunculus* or stalk, with the *lamellæ* and all, nothing being taken away. They were not washed before they were laid in the pickle, **satlakan**, to be boiled.

[T. II. p. 101.] *The 4th August, 1748.*

At midday came Captain Lawson from London to Gravesend, whither the ship had already gone before on the  $\frac{20}{31}$  July.

*Gravesend* is a little spot which lies in a charming place in Kent close to the river Thames, about 22 English miles from London. The houses are for a great part of brick, but some are old and built in a very ugly style. The streets are uneven, irregular, and paved with flints. In the town is a beautiful English Church and a Presbyterian House of Prayer, **Bönehus**. Outside the English Church is this inscription: "Hanc ædem incendio lugubri deletam Georgius II., Rex Munificentissimus, Senatus Consilio, instaurandam decrevit," which at once points attention to the conflagration which this little town suffered some years back, when a great part of it was laid in ashes.\*

In and around the town are several kitchen gardens, **kryddgårdar**, whence a large quantity of kitchen garden produce is sent up to London nearly every day, besides what is sold to seafarers, **sjöfarande**; and Gravesend *Asparagus* is especially famous, as it is

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\* 24th August, 1727, destroyed 110 houses and the Church. Pocock *Hist. of Gravesend, 1797.* [J. L.]

reckoned the best in England. The principal support of the inhabitants consists here in selling all kinds of provisions and liqueurs to sea-folk and travellers. All ships which come from abroad to London here take a Custom House officer on board. Here also nearly all ships from London furnish themselves with fresh provisions before they commit themselves to the seas. The ships generally go some days beforehand from London to Gravesend, partly [T. II. p. 102] to furnish themselves afresh, partly to, as it were, undergo from the Custom House officer a new *clearing* before they go to sea, and the captain and passengers commonly come down here 4 or 5 days after the ship.

Exactly opposite Gravesend on the other side of the river Thames, in Essex, lies the fortification called *Tilbury Fort*, which commands the approach to London.

Between Gravesend and London there run daily several small yachts or boats, which convey passengers and other travellers there and back.





[*The 5th August, 1748.*]

[At this point commences Pehr Kalm's 'Travels into North America,' translated into English by J. R. Forster. With Maps, Cuts, and Notes. Warrington, 1770-71. 3 vols., 8vo. The account of the voyage down the Channel is much abridged, and descriptions of points on the English Coast are omitted altogether.]

*The 5th August, 1748.*

**Resan.** *The Voyage.*

At 6 o'clock in the afternoon we went on board the ship *Mary Gally*, commanded by Captain Lawson, and bound for Philadelphia in North America. We then sailed in the Lord's Name from Gravesend, and went a good piece down the river Thames before we cast anchor. We lay there till about 3 o'clock the following morning, when the voyage was continued.

*The 6th August.*

In the morning we continued our voyage down the river Thames, and so out into the Channel, down which we afterwards sailed under the coasts of England. We

could constantly see the shores of England, and were at times in tacking close into them.

All those parts consist of Chalk which are high, steep, and almost perpendicular. Measured by the eye the height of these steep Chalk coasts, from the water up to the turf, seemed to be 3 to 4 fathoms, in some places [T. II. p. 103] more, in other places less. We could see with the naked eye that in these chalk cliffs also there were such strata of bare flints as have been described above, one of which, just half way between the water surface and the top soil, ran quite horizontal, as though it had been arranged on the dead level, and was visible nearly the whole way along this piece of coast.\* Lower down, a little above the surface of the water, another appeared, but the view of it was broken and indistinct. Upon these Chalk hills lay beautiful arable fields, on which the crops which were almost all wheat were just beginning to turn yellow, and were nearly ready for cutting. We could not see any sheaves or cut crops; whereas, at the beginning of the week before, we saw rye sheaves in Essex from Gravesend.

About six o'clock in the evening we arrived at *Deal*, off which we cast anchor. *Deal* is a little spot or town, **fläck eller stad**, lying on the shore at the entrance of a little bay, **vik**, which the sea has made. The houses are nearly all built of brick, and roofed partly with *pantiles*, but mostly with plain tiles.

There is only one church in the town, not large, and almost without a tower, only a little box, **kur**, in its place. The churchyard is tolerably large, and has planted round it an avenue of elms, in which one can go and walk. The inhabitants live tolerably comfortably, and support themselves principally by trade. Nearly all

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\* This has been called by Mr. Whitaker "The Three-inch Band." [J. L.]

ships which come from London, and intend to proceed through the Channel, or *vice versâ*, lie here one day or more and furnish themselves commonly with all kinds of fresh provisions, besides [T. II. p. 104] brandy and other wines, although they have to pay very heavily for them, because the people know how to make a good bargain. A great many also get their living by rowing, in that they carry passengers from the ships to the land and back, for which they always make them pay dearly. By fishing they also make handsome profits, by selling the fresh fish to the sea folk who come here to anchor. In the late war most of them followed privateering, **kaperi**, and thereby accumulated large sums. The haven, **hamnen**, is not particularly good, for it is open to the south and east, from which quarter the storms have freedom to beat upon this place from the sea, but that does not make any difference, because it is mostly in the absence of this wind that the ships lie here in the roads. Here the ships leave the pilots whom they had from London to Gravesend. When the south-east gales are blowing heavily they know it in Deal, because it lies open to this wind. Here also the ships which are bound for London take their pilots on board.

*The 7th August 1748.*

In the morning I landed at Deal, where I was till towards evening.

*Lumbricus Marinus.* When the sea-water at ebb-tide fell off Deal, the fishermen went down on to the lowest places, which the sea had just left, and which were covered over with a fine sand, where they dug up the *sea-worms*, **hafsmaskar**, which have their residence under the sand on the sea-shore, and are described by Linnæus in his *Vest Gotha Resa.* p. 189 [T. II. p. 105], and also in his *Fauna Svecia*, 1270 [1746].

[also in *Systema Naturæ*, Vindobonæ, 1767, 8vo. *Ed.* Decima tertia, 3 T.—T. I. pars. II. p. 1076, 277]. They dug up these creatures, **kräk**, which are a species of earth-worms, **metmaskar**, in this way. They had a little *digger*, **grop**, of iron with three grains or tines, with which they dug up the loose sand where these worms had their residence, when they commonly found them 18 inches deep in the sand. The sign which they had to be able to know where these worms lived is that they creep up out of the sand at high water, and lie upon it, but as soon as it is ebb and the tide goes out they creep down under the sand. Meantime, as far as they have been on the surface of the sand they leave their **träck** behind them, which consists of bare fine sand, and looks like small worms lying in a ring, or of disc-shaped forms, **kringel-lika former**, in the other sand. These raised sand-rings indicate to the fishermen the place where the worms live, and by that means betray them. The worms they get are collected in bottles, and are used as bait on hooks for whiting or cod. They call them *Logworms*.\*

*Machine to wind up Boats.*

At Deal there is ebb and flood, when the water for six hours rises high up, and for six hours falls very far out, therefore to get up the boats so that they may stand more safely and not be broken by the waves when it begins to be high water, they have on the beach above where the boats stand, *capstans*, with perpendicular axes, with which by means of a rope which is fastened near the bottom of the boat, they wind it up as high as they wish on the beach.

*The 8th August, 1748.*

Next day at 3 o'clock in the morning we left *Deal*, and

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\* That is Sea-worms. *O. Norsk*, Lögr, the sea. [J. L.]

went with the tidal current from thence along the Channel, but not faster than the stream drove us. We had the English coast at a short distance on our right-hand. It consisted of bare chalk, was tolerably high, and stood for the most part perpendicular.

At 10 o'clock in the morning we passed *Dover*, which is a little spot with a *Castell* above it on a hill. The country here along the coast was in some places quite steep, in other places long-sloping for about half an English mile, above which the high chalk hills came on, **togo emot**. These were not perpendicular, but more sloping, and now over-grown with grass. When the land had gone so long-sloping for a certain distance, it again became steep and perpendicular, so that bare white chalk appeared. In the afternoon the wind blew rather fresh, **blåste en liten kul**, so we luffed (*loverade*)\* off and on between the English and French coasts. We were sometimes not far from the French side, so that we could, especially with a glass (*Perspectiv*), clearly see houses, fields, &c. Here, I remember what I read in Camden's *Britannia*, viz., that he says that he early formed the opinion that England had formerly joined on to France† or Flanders, where Dover and Calais now lie, by some small arm, and that the sea had afterwards washed it away, or some other accident now unknown to us, had come to destroy the same arm or ness, **arm eller näs**. I for my part am much inclined [T. II. p. 107] to believe the same when I consider the following facts, viz., that England opposite Calais, between Deal

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\* *Sw.* Lofvera, *Fr.* Louvoyer, *Ger.* Laviren, *Eng.* Luff. Bailey, *Eng. Dic.*, 1736, has "To loof (commonly pronounced luff) a term used in conding of a ship, as loof, &c., i.e., keep the ship nearer the wind." [J. L.]

† To say nothing of the uncertain conjecture of several writers, Antonius Volscius, Dominicus Marius Niger, Servius Honoratus, Joh. Twine, Guil. Musgrave, and Henry, *Hist. of Btn.*—Pref. [J. L.]

and Dover, forms a projecting point, and that Flanders near Calais forms a point projecting towards England; that both points consist of the same kind of earth, viz., of high perpendicular chalk cliffs, **kritvallar**; that the land on both sides has the same *facies* and appearance; consists of a collection of round and long-sloping hills of chalk, **kullriga och långsluttande högder af Krita**, so that if one who had seen the coast of England should get to see the coast of France here, and did not know that it was such, he would certainly believe that it was the English coast, **vallen**, and English hills. On the English coast we saw here and there some beautiful churches, small towns, &c. The ploughed fields lay on the hills, but trees were here rare, and we did not notice that they were divided into *enclosures* by means of hedges.

In the evening a multitude of Porpoises, **Marsvin eller Isor**, tumbled about everywhere in the sea around our ship.

#### *A Burial at Sea.*

In the evening, a woman, one of the religious fugitives from *Pfaltz* in Germany was buried according to the usual custom of the sea. She was one of sixty men, women and children, who were now going with us over to the English colonies in America, to settle there. The funeral was performed in this way, that after they had bound her in sailcloth, a quantity of coals in an old sack were fastened to the feet, when she was laid on a board, and then plunged from the board into the sea, when she sank at once to the bottom. Some Psalms were sung first.

*The 9th August, 1748.*

**Resan.** *The Voyage.* At daybreak the ship was allowed to drive forward with the tidal current as long as

it lasted ; but before that, as long as the stream was against us, we had cast anchor. At daybreak we passed one of England's promontories, **uddar**, called *Dungeness*. At 9 o'clock the stream was against us, when we cast anchor nearly opposite *Fairlight*. On the sea it was now so calm that the water scarcely moved beyond that the stream drove it. We could see the English coast quite easily, which was in some places high, steep, and sloping, almost perpendicular, and in other places long-sloping. The perpendicular earth walls near the sea did not here consist of chalk, but of a light grey earth. We could nowhere see a sign of chalk in them. The French coast lay so far from us that we could scarcely see it. At 12 o'clock noon it began to blow somewhat, when we lifted anchor, unfurled the sails, and with tacking, drew away.

We were sometimes right under the English coast near *Fairlight*, which coast did not here consist of chalk but of a *grey fine sand*, as far as we could discover with the glass and the naked eye ; besides this, Captain Lawson confirmed the same. This coast also was steep enough, so that no one could climb up it without a ladder, **stega**, or some other instrument, **verktyg**, but in some places it was long-sloping. The country above it was, like the rest of England we saw, a collection of hills [T. II. p. 109] side by side, with dales between. Yet the hills here were more gently sloping. On them lay ploughed fields, meadows, and pastures, which were all enclosed with green hedges and leaf-trees. Here and there some churches appeared on the hills, with quite little short and pointed steeples on massive towers, which had been so built, that the wind which here has a large field to gather strength upon, might not blow them over. We could see no chalk cliffs or hills here. Towards evening we cast anchor for a short time, but as a gentle

east wind began to blow at 9 o'clock, the anchor was again lifted, and the voyage was continued the whole of the following night.

**Hafsdjur.** *Marine Animals.* [Jelly fish.] We saw also a kind of marine animals floating in the water something like the annexed figure. The colour was mostly violet. It was round and opened itself nearly like a purse, **pung**, when we saw in the midst of it four white rings. It must be some kind of *Medusa*. I could not get a chance of catching any. The sizes were various, some quite small of 1 inch diameter, and the largest about 6 inches across.



*The 10th August, 1748.*

The voyage was continued the whole of this day with a favourable and delightful wind, which drove the ship quickly, but raised some waves on the sea. In the morning at 7 o'clock, we caught sight of the *Isle of Wight*, which lies outside Portsmouth, and [T. II. p. 110], belongs to England. It, as well as the country round, seemed to consist of chalk, because the cliffs, **vallarna**, were snow white. It is also highland enough.

**Färilar.** While we were sailing here out on the sea, so that we could only see a little of the English coast a great way off, but not any other land, there came some white butterflies flying over the sea, and sometimes accompanied the ship for a little. Sometimes also they flew before the ship. I could not catch one to see what species it was, but they exactly resembled the snowwhite *Cabbage Butterflies*, **Kål Färilar**, both in shape and size.

I did not see them pitch anywhere on the ship. We also saw them yesterday. All wondered how these frail creatures ventured so far from the shore.

At noon we passed in front of the *Isle of Wight*, which

was a very high land, but yet near the shores mostly long-sloping. The soil was there of chalk, but this chalk is said not to be so good as that near Gravesend, but harder. On both sides of the Isle of Wight appeared high steep cliffs of bare chalk. The land on the surface of this island seemed to be divided by hedges.

At 5 o'clock in the afternoon, we began to see the Isle of Portland, nearly in front of us at a great distance. We also saw the English coast right opposite us, but a long way off. This was [T. II. p. 111], mostly steep enough, and seemed quite white, but whether it was chalk or some white kind of stone or other, I could not determine, for the long distance.

*The 11th August, 1748.*

**Resan.** The Voyage. We sailed quickly the whole of the previous night, and also this day. At 6 o'clock in the morning we saw *Bolthead*, a promontory of England, inside which *Plymouth* (Pleymouth) lies. Porpoises tumbled about here and there in the water. At noon the wind moderated, and almost died away, so that the ship could not travel very fast. Otherwise our ship was a very fast sailer. The captains who were on board agreed that they had scarcely ever seen any ship which sailed so fast. They reckoned it thus, than when other ships in one hour sailed three miles, ours in the same time sailed 5 miles. At noon we left the English Coast, and saw it again no more. **Vi lämnade vid Middagstid Engelska vallen och sågo den ej mera.**

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