

## A PEAT-MOSS.



EARL EINAR it was, as the story goes, who first taught the Orkneyman to make the turf into peats—Torf Einar, as he was called in memory of this fact. If the story is true, he did a great work for the islands,—not quite treeless in his day, perhaps,

but yet in a bad way for fuel in the long winter evenings,—and he deserves a monument almost as splendid as that of Earl Magnus.

The wood fires went out long ago, and the peat fires will, no doubt, follow in due time. True, the peat-mosses are not yet exhausted, but year by year they recede, and the road to “the hill” grows longer. There is less time to spare now for peat-cutting than there used to be, for our modern methods of farming require more constant labour. But through our trade with other lands money is circulating more freely, and coal can be bought to take the place of peat. The change means more money and less time, and that is just the great difference between this century and those which have gone by.

But the peat-moss is not yet deserted, and in the early summer it is still a busy scene in many places.

Harvest has ever been a time of joy, and peat-cutting is the harvest of the moss. The flaying-spade and the tuskar are not mere toys, nor is "taking out" the newly-cut peats a holiday task; but there are few scenes where more cheerfulness and wholesome mirth can be seen than at many an Orkney peat-cutting.

Let us approach one of these familiar "peat-banks," not necessarily to share in the fun, and certainly not to take part in the labour, but to find out what we can about the substance which we call peat. Here is a bank where the moss is deep enough to give three lengths of peat, one above the other, besides the surface layer, which is cut off and thrown down on the old peat ground.

This top layer, we see, is, like ordinary turf, full of the roots of growing plants—heather, rushes, sedges, and grasses of various kinds. Filling up the spaces between them is a tangled mass of spongy mosses. These mosses are the most important plants of all in the formation of peat.

The most common of the bog-mosses is the *Sphagnum*, a small branching plant with thin, scaly leaves. Where there is plenty of light it is of a vivid green, and the tops of the sprays look like tiny emerald stars. Lower, where less light comes, the plant looks yellow and sickly, while still lower it is black and decaying. The black substance which we call peat is really a mass of decayed sphagnum moss.

The upper part of our peat-bank, just below the turf which has been cut away, is more loose and fibrous than the under part. The roots of the larger

plants may still be seen in it. The second and especially the third peat are much closer in texture and of a deeper black colour. The vegetable matter is more completely decayed, and if we were to compress it sufficiently it would look very like coal.

At one part of the face of the bank we notice a layer of a different kind. We find the roots and parts of the stems and branches of small trees embedded in the moss. There has been a wood here at one time—how long ago, we cannot tell. That layer of moss which now lies above the remains of the trees may have taken centuries to form.

In many places we find more than one such layer of wood, separated as well as covered by thick layers of moss. Some of the trees have been of considerable size, too; the trunk of one found in the parish of Stenness measured about five feet in circumference, while the moss near it was thickly studded with the nuts which had fallen from it year after year.

The trees whose remains have been found in our mosses include the poplar, pine, mountain ash, birch, hazel, alder, and willow. One very interesting fact is that the silver fir is also found, a tree which does not now grow in Scotland, and is not found in Scottish peat-mosses, but which is common in Norway.

What curious tales those peat-mosses tell of the changes of climate which have passed over our islands! At the present day it is only in our deepest glens, as in Hoy, that we can find even small trees and bushes growing wild. Yet at one time our islands must have been well wooded, though it is only in the mosses that the remains have been preserved for us to see.

The sphagnum, again, has another story to tell. It requires abundant moisture for its growth, and at present it can find this only in flat and boggy ground. It is therefore only in such places that peat is now being formed. Yet we find peat on most of our hillsides and even hilltops. This tells of a time when our climate was much wetter than it now is, and when sphagnum flourished everywhere.

One more story of a different kind can be read from the peat-moss. Here and there, as at Deersound and Widewall Bay, when the tide is out, we may find peat-moss, and the remains of large trees among it, far down on the beach, many feet below the level of high water, and most of it covered to a considerable depth with the sand and gravel which form the upper beach and the land near it. This tells clearly of a gradual sinking of the land in the neighbourhood. When that moss was being formed, and when those trees were growing, the shallow bay must have been dry land.

The plants and flowers which grow on our mosses are worth more than a passing glance. Let us look at some of them. The sphagnum we have already mentioned; it belongs to the class of flowerless plants. The others we shall mention are flowering plants.

Best known of all, perhaps, is what we call heather. This name is used for at least four different plants in Orkney. Two of these bear that common but beautiful flower the heather-bell. One bears bells of a pale, rose-coloured, waxy appearance; the other, which is more common, has bells of a darker and often purplish red. The former is the cross-leaved heath, with its little green leaves arranged in whorls of

four; the latter has its leaves in whorls of three, and is known as the fine-leaved heath.

The most common kind of heather is the ling, which flowers somewhat later than the heaths. It is this plant whose spikes of tiny rose-coloured flowers make our hillsides a purple glory in the early autumn, and whose leaves and stems give them their familiar brown tint during the rest of the year. A white variety is also found, the "white heather" which is supposed to bring good luck to the finder.

Another kind of heather is that which bears the small black berries so well known to every young Orcadian. This plant is not a heath at all; it is really the black crowberry. The berry is preceded by a tiny purplish flower, which probably few of the berry-gatherers have ever seen.

The "rashes" or rushes are a common feature of our moors. Two kinds may be noticed, one with its flower-tuft more closely packed together than the other. These rushes were of some use in former days. The white pith was extracted and dried for winter use as wicks in the old oil-burning "crusies," before the introduction of paraffin.

There are many smaller plants of a similar type, one of which, the bog asphodel, ought to be well known; its pretty, yellow, star-like flowers, grouped on a stalk some eight inches high, often make patches of our moorlands glow with the shimmer of gold.

The cotton-grass is probably more familiar. There are two kinds found in Orkney, one bearing a single tuft of white down on each stem when seeding, the other a group or cluster of tufts. This plant is not



*Plants of the peat-moss.*

1. Common ling (*Calluna vulgaris*). 2. Cross-leaved heath (*Erica tetralix*). 3. Black crowberry (*Empetrum nigrum*). 4. Cotton grass (*Eriophorum polystachion*). 5. Grass of Parnassus (*Parnassia palustris*). 6. Bog asphodel (*Narthecium ossifragum*).

a grass, and has no connection with the cotton plant; but the name is a good one for all that, and no one can mistake the plant to which it applies.

One of our most beautiful moorland plants is that which bears the attractive name, "grass of Parnassus." This also is not a grass, and does not in the least resemble one. It is well worth looking for and

looking at when found. From a group of dark-green, glossy, heart-shaped leaves rises a slender stem four or five inches high, with one leaf growing on it midway up its height. This stem bears a single cup-shaped flower as large as a common buttercup, with five white petals marked with darker veins. The central parts of the flower are yellowish-green. Round the stigma stand the five stamens, and between these and opposite the petals are five curiously shaped nectaries or honey vessels. They are fringed with a row of white hairs, each ending in a yellow knob, and look like a tiny golden crown placed in the centre of the flower-cup. The name of the flower is said to be taken from Mount Parnassus in Greece, the home of the Muses. Certainly the flower itself is dainty enough to be a favourite with the poets.

Some plants have developed the curious habit of eating, or, at any rate, digesting and absorbing the juices of insects. Two of those insectivorous plants may be found in our peat-moss. In certain places we may notice that the thick carpet of moss is dotted with little rosettes of bright yellowish green, which look like vegetable star-fishes scattered over a beach of moss. That is one of our "plants of prey." It is called the butterwort.

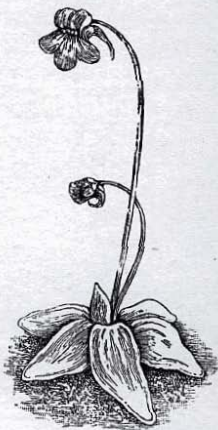
From the centre of the rosette rises a slender stalk of two or three inches, bearing a small dusky purple flower somewhat like a dog-violet. The green leaves which form the rosette are stiff, and lie close to the ground, as if to keep a clear space among the other plants. They curl up at the edges, and look as if they did not want to mingle with their kindred

round about; and indeed they do not, for they have other game in view.

Attracted by this bright green star, a small insect comes in search, perhaps, of honey. He finds the leaf covered with a sticky fluid, and his touch causes more of the fluid to come out of little pores in the leaf. The insect is held fast, and the gum clogs up the pores of his body so that he cannot breathe. He soon dies. Then the plant pours out an acid liquid, which dissolves all the soft parts of the captured insect, and leaves only the skeleton. At the same time this dissolved or digested food is sucked in by the pores of the leaf.

The acid juice of the butterwort is so like the juice of the animal stomach, that in Lapland the people used to pour warm milk over butterwort leaves, and thus changed it into a curd, just as we do by adding to the milk some rennet, made from the stomach of a calf.

On this same patch of moor we may find another flesh-eating plant. This is smaller than the last, and less easily found. It has a slender flower-stalk with a spike of small whitish flowers rising from the centre of a curious group of leaves. The leaves lie flat on the ground; they are small and round, no larger than split peas, and covered with bright red hairs that look like tiny red pins stuck in a tiny green pin cushion.



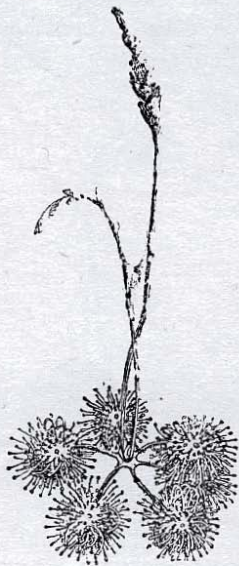
*Butterwort.*



Each of these hairs carries at its tip a bead of clear fluid, which glitters in the sun; hence the plant is called the sundew. Let any thirsty insect come to drink this dew, and a strange thing happens. He finds his feet held fast by the sticky dewdrops, and the more he struggles the more of these does he rub

against. He is held fast until he is suffocated, and then he is digested and absorbed by the leaf.

When the fly alights on the plant, the hairs begin to bend in towards the centre of the leaf. Even those hairs which have not been touched bend over until all of them are helping to hold fast the prey and dissolve it with their liquid. If the insect alights near the edge of the leaf, he is thus carried towards the centre and held fast, while the leaf itself bends so as to form a cup for the acid that pours from the hairs. If two insects alight on the same leaf, the hairs form into two groups, those near



*Sundew.*

each animal curving towards him, so that the leaf acts as if it had two hands. In this way all the insects that come are attended to.

There are many other curious plants to be found in the peat-moss, but those we have mentioned will suffice to show how much of interest there is in our bleak mosses and moors.