The generative system consists externally of a clitellum, occupying in one of the two specimens that I examined as many as nine segments. On this open the generative apertures, three pairs of which are situated close together in a sucker-like structure at the posterior end of the clitellum, upon which there is no development of glands; each pair corresponds to one of the three segments, seventeen, eighteen, and nineteen. The middle pair open into two large "prostates"; no ducts were found in connection with the other two pairs. There is also a fourth pair of apertures on fourteenth segment, with which again no ducts were discovered to be continuous. The testes are a pair of racemose glands occupying twelfth segment. Two pairs of fimbriated organs, occupying eleventh and tenth segments, are perhaps the oviducts, or possibly the vasa deferentia. They open separately on the wall of the segment behind that in which they are situated.

There are no segmental organs present. The vascular system presents no important differences from that of other worms. The dorsal and ventral vessels are connected by six pairs of hearts increasing in size from before backwards, and occupying from the eighth to the thirteenth segments inclusive. There appear to be no intestinal hearts ("cœurs intestinaux" of Perrier), though the supra-intestinal vessel is present, and in that region of the body in which the hearts are developed is double. Capillaries extend into the hypoderm as in the leech, the fibres of the two muscular coats of the body wall as separated into smaller and larger bundles by a meshwork of fibrous connective tissue. The perivisceral cavity is put into communication with the exterior by a series of dorsal pores.

3. Geological Notes. By Dr. Heddle.

Leaf-bed in Canna.

Since the discovery, by His Grace the Duke of Argyll, of the "Leaf-bed" at Ardtun, in Mull, there has not, so far as I am aware, been another found throughout the whole of that extent of land and shore, where we might hope for such a discovery, among the Inner Hebrides.

It was my good fortune to light upon one last summer. While

lying in the harbour of the island of Canna, during a boulder and mineral hunt, I heard that *fuller's earth* had been found at the south-western end of the island. Upon being shown samples of this, I noticed among them fissile schists very similar to those of Ardtun. In proceeding, therefore, round the western cliff-girt coast of the island, to visit the fuller's earth locality, we landed at every accessible point under the great line of precipice, and at one, situated almost at the north-west corner, and immediately under the loftiest point,—more than 730 feet in height,—we found a leaf-bed. There is here a cliff foot, running for some little distance along the shore; this is strewn with numberless masses of rock which have fallen from the cliff, and which fragments give shelter to a colony of auks and puffins.

By the appearances usual to such colonies, the spot may be seen from some distance. Landing can be effected only in the calmest weather.

The leaf-bed can be most easily cut into, if not also most easily seen, in a small cave; this gives shelter alike from what may fall from the cliff, from the skies, and from the birds.

The bed consists of a highly laminated brown clay—almost a mud; for, on account of the water which oozes through the very-vesicular overlying dolerite,—which streams down its face, and which is flung in spray from the sea,—the material of the bed is in its outer portions, and, when first broken into, little harder than putty. Its laminae are as thin as paper. They split with a tap, or slight pressure from the edge of a knife; this easy cleavage being to some extent due to the extraordinary number of *leaves* which lie, flat-pressed, between the argillaceous layers. Most of these leaves are as pulpy and soft as the rock, and blacken the hands with their fragile fragments.

By working with a pick-hammer a little way under the rock-cover, firmer portions may be reached; and specimens which will endure the friction of carriage obtained. The leaves seem much the same as the species found at Ardtun. A series has been sent to the Industrial Museum.

The whole thickness of the towering cliff is made up of successive layers of igneous rock,—sometimes basalt and basaltic—sometimes amygdaloidal,—sometimes tufaceous. I could distinctly see bands of

plynthite, which may here represent an overflowed and burnt layer of clay-soil. I also imagined that I could with a binocular make out other beds of the same fissile clay as that which, at the cliff foot, holds the plants.

As there was a gentle dip towards the south-west, I was prepared to find that one or other of these beds had come down to the water edge; to form, when puddled by the waves, the so-called fuller's earth;—and this was very much the true state of matters. A washed-out dyke, conjoined with a small fault, has formed a “geo,” terminating in a cave. At flood-mark the waters stand in part of this cave. Surface waters are also constantly sapping into it from above; making it more ample, by reducing to pulp, and carrying away the exposed edge of a bed of much the same rock as that which has been already noted as carrying the leaves. The fuller's earth was found to be, at the time of our visit, of about the same consistence as pea-soup. By taking portions of the dry bed, pounding them, floating off in water, and sedimenting, I *made* some,—decidedly superior to the native article. A sample of this I sent to the Museum.

The Pitchstone-Porphry River of the Scur of Eigg.

The pitchstone plug of the river-cañon of Eigg, forming the singular Scur,—picturesque from certain points of view, weird and fantastic from others,—should be about equally well known to scenery hunters and to geologists. The filled-up water trench is not of great length; somewhere about two miles, as its historian tells us. This is but a short junk of such a mighty river as that must have been, which cut a channel at least 400 feet deep and about 1000 wide. As the eye ranges over a wide expanse of ocean at the spot where this pitchstone cast is shorn off at the *west*,—and as no remaining fragment of the widespread lands from which its waters must have been gathered on the *east*, now remains,—there seemed to be but little hope of our collecting any further fragments of its history. Chance threw the writer upon one such fragment. I was looking for boulders everywhere; Mr. Harvie Brown was looking after grey seals, and birds' eggs, grey, green, or blue; and so we landed upon Hyskier. *Hyskier*—that is, the High Skerry; only 40 feet, but high enough to afford some sort of a shelter to boats which might

fly for safety to the little rock-girt lagoon, which is cinctured by its clustering rocks.

There are two Hyskiers,—one outside Long Island, the other inside. Both are famous for their seals, and both are “rude” enough, if that word was used by Sir Walter to express roughness. It is the *inner* Hyskier that is the subject of these remarks. It is about 9 miles from the nearest land of Canna, with a deep-water channel all round. It consists of a group of skerries, almost united at low water.

Upon landing, myriads of boulders of every variety of rock were seen; and the writer at once recognised the pitchstone porphyry of the Scur of Eigg, as the rock upon which the boulders lay. The whole clustre of skerries is formed of the same rock; which, both in the dun grey of its tone of colour, in the proportional quantity of crystals of imbedded sanidine—and in the size of its basaltic pillars, is unmistakably the same rock as that of the Scur. This is a markedly characteristic one;—one which, in fact, is distinct from all other pitchstones of Scotland.

Standing on these skerries, the eye looks directly on the truncated end of the Scur, which is about 22 miles distant. It ranges also somewhat along its southern flank, as the course of the ancient river of Eigg had been a tortuous one. But its last convolution on that island was a flexure *somewhat more southerly* in its direction than its general course. This direction threw it clear of the south of Rum, and pointed very much to the solitary cluster of pitchstone islets of Hyskier.

The most southerly skerry of the cluster is separated from that nearest to it by a deep wall-sided channel. This, to appearance, was about 4 or 5 fathoms in depth; and the mural cliffs in each side rose to a height of about 23 feet. (It was low water at the time.) The channel was perfectly straight in its course. At first sight it resembles a washed-out dyke. With the knowledge we have, however, of the nature of the Scur, it very much more probably represents what had been a wall-sided islet, which stood midstream in the ancient river; its amygdaloids and tuffs having now been sapped out by the surf, as have the old river banks and the surrounding land.

On a supposed Organism from the Marble of Sutherland.

I have never seen fit to express an opinion upon the vexed question of the *eoazon canadense*. This, not because I have *not* formed an opinion, but because I have never seen specimens sufficiently characteristic to furnish me with grounds ample enough to enable me to *give force* to my opinion; also because I consider that certain of the grounds adduced by those who hold the same view as my own, are weak, or at least not strong, from a mineralogical point of view.

Having myself found, and being as yet the only one who has studied *the mode of occurrence* of the structure to which I now direct attention, it may be considered that a similar amount of reticence is not in its case either reasonable or justifiable.

The thing of which I write was found in the white saccharine marble of Sutherland last summer. I have during many summers made myself familiar with the modes of occurrence of minerals,—in fact, I have become a successful *mineral hunter*, just in virtue of familiarity with the *modes of occurrence* of minerals; I am perhaps then not going too far in saying that when, after a full consideration of the mode of occurrence and structure of *that thing*, I concluded that it does not accord with minerals, *either in mode of occurrence*, or *in structure*, it must be at least worthy of the attention of those who are more familiar with structures *not mineral* than I am.

As *the thing* at first sight looked exceedingly like eoazon (what I knew of it), and as its resemblance to eoazon only increased the longer I looked at its sections (which I prepared with my own hands, in all directions), I sent it to Dr. Carpenter, making over to him *in toto* the investigation of its *inner nature*, but reserving to myself—that which he could not do—the telling all the rest about it.

I was well aware that, in concluding that it was wonderfully like, if not identical with, eoazon, I was giving to it a stratigraphical position which many would hold was one “where nae sic thing should be;” but, as it is one of the tenets of my geologic faith, that where a thing *is*, is where that thing should be, I was not much disturbed in my conclusions.

I am permitted to say, and it may be well that I should state

this much, that Dr. Carpenter reports that its appearance is very eozooic, while later letters say “exceedingly interesting.”

Such are the essentials of its interest which induce me to lay before the Society these notes upon a substance of whose description it is evident that my share must lie only on the mineralogical side.

While endeavouring to discover the bedding of the almost amorphous white marble, my eye was arrested by a dark streak, which promised some aid. Upon approaching it, it presented an appearance similar to what we have been assiduously taught to believe would be presented by a junk of the great sea-serpent. It also somewhat resembled the old “*boas*” worn by ladies, laid horizontally on a face of the marble; and it was *altogether similar* in appearance to the whale cutlets which are hung or stretched in the sun to dry, in the Faröe Islands.

The first portion found lay imbedded in the marble, about 2 feet from its surface. Its length was $16\frac{1}{2}$ feet, and its thickness 4 to 5 inches. When found, I was carrying only a four-pound hammer; but, upon Dr. Carpenter reporting “high interest,” I returned to Sutherland with one of more earnest dimensions; and by removing the cover, found that in parts it extended, with almost unvarying thickness, into the rock for $3\frac{1}{2}$ feet.

It lay in the rock in slightly wavy folds; at one spot it threw off, at an angle of about 15° , an arm or *process*; this was about an inch narrower than its mean trunk, and of about 2 feet in length; at another spot it threw off a short process, at right angles.

Its exposed surface was much corroded by the weather, but its structure was unfolded thereby. That boldly displayed structure consisted of gently-plicated but very rough layers of a substance, which evidently was less soluble in rain-water than had been that whose removal left the layers protruding.

The appearance of this exposed surface is precisely that of the representation of eozoon given by Carpenter, in the last edition of his work on the Microscope; and the colour is very much that of printer’s ink. When broken into, the rippled structure stands out in blue-black, upon a nearly white ground, which is mottled with granules of yellowish-grey. Occasional patches of greenish-yellow granular precious-serpentine occur; there occasionally are nodules of the latter the size of the fist, and this sometimes is white.

That mineral speaks for itself. As to the others, I found the blue-black in distant octahedral crystals: they are *spinel*, possibly *picotite*, though I have not determined the presence of chromium. The grey-yellow granules are generally rounded on the angles, as is so frequently the case with minerals imbedded in a limestone which has been subjected to the extreme energy of metamorphism. But this substance I have also got in crystals. These are of a pale fawn colour, identical with that of *danburite*; but the form of the crystal is that of *chondrodite*. The presence of fluorine I have not yet determined; and as there is a form of *sahlite* almost indistinguishable from that of *chondrodite*, I will not say that these crystals may not be *this* mineral, which is the common ingredient of such marbles. The white matrix (soluble in the rain-water) afforded me, on analysis—

Carbonate of lime,	.	.	46·307
„ magnesia,	.	.	37·632
„ iron,	.	.	1·022
„ manganese,	.	.	·368
Insoluble (<i>chondrodite</i> ?),	.	.	15·108
			<hr/>
			100·437

and is thus a ferruginous dolomite.

Such are the chemical and mineralogical materials of which this fabric is composed. The fashion and mode of arrangement of these materials I leave others to unfold; inasmuch as they appear to me not to have been subject to the laws which govern molecular arrangement in crystals; and that hence, the thing, as a whole, is not a mineral body, but an organism.

When it shall have been said, in leaving the question at this stage,—standing aside to give the histologists and palæontologists *their* innings at the describing of *the thing*,—that I am merely evading a duty, self-imposed in virtue of the foregoing expression of opinion, I shall be prepared to state the grounds upon which I hold that its structure cannot fall to be considered under crystallipolar arrangement. Meanwhile, I think it well to leave that which is to be seen to those who can describe the complexities of flowing lines and curvilinear outlines, so much better than one who deals with straight lines and angular inclinations.