

TRANSACTIONS
OF THE
GEOLOGICAL SOCIETY OF GLASGOW.

NO. I.—THE MINERALOGY OF THE FARÖE ISLANDS. By the late
M. FORSTER-HEDDLE, F.R.S.E., &c., *Hon. Member.*

[*Introductory Note.*—The Faröes are a group of islands in the North Atlantic Ocean which belong to Denmark. They lie between Lat. $61^{\circ}20'$ and $62^{\circ}20'$ north, intersected centrally by Long. 7 west, and about 170 miles north-west of the Shetland Islands. They are 22 in number, and of these 17 are inhabited. The whole group stretches about 65 miles from north to south, and 44 miles from east to west, and forming something like a triangle with the apex to the south.

The largest island is Stromsöe, which is in the centre of the group, with an area of 104 geographical square miles; the other larger ones being Osteröe, Suderöe, Sandöe, Vangöe, and Bordöe, with an aggregate area of 376 geographical square miles.

The islands generally present steep and lofty precipices to the sea, which running between them often forms fiords and bays in which good anchorage is found. The surfaces rise towards the interior and terminate in peaks. Of these the culminating one is Slatteretind, in Osteröe, with a height of 2800 feet.

The climate being insular, is much milder than the latitude might seem to indicate. The soil has sometimes a depth of 4 feet, but for the most part is thin, and often does not exceed 6 inches.

The capital is Thorshavn, in Stromsöe, and the total population is about 8000. Ed. 1902.]

Notwithstanding their prolific yield of minerals, the islands of Farøe have never been examined with much care. The late Mr. Alexander Rose, Lecturer on Mineralogy, and Dealer in Minerals in Edinburgh, informed the present writer that Count Vargus Boedemar spent some short time in them when returning from an exploitation in Iceland. Sir George Mackenzie has given some scanty information regarding their minerals in the *Transactions of the Royal Society of Edinburgh*. Mr. Alexander Bryson visited them more lately, but confined his observations to their geology.

In 1856 I induced my friend, the late Mr. Dudgeon of Cargen, Dumfriesshire, to associate himself with me in a more persistent assault upon their rocks. A cutter of 48 tons was chartered, her crew strengthened, a quarryman engaged, blasting and heavy mining tools provided, and the vessel specially fitted for the storing and conserving of the spoil.

The consent of the Governor of the Islands was next secured. Most unfortunately, at the last moment, Mr. Dudgeon found himself unable to accompany me; but I was fortunate in securing the companionship of Mr. August Randrop, son of the Fiscal of the islands—an excellent general naturalist, and a good linguist.

Several months were spent in the islands—more than twelve barrels full of minerals secured—while the notes which follow present, in a condensed form, the information gained.

ISLAND OF NAALSÖE.

From the northern escarpment of the hill south of Eide—the highest hill of the island—a number of large blocks and a considerable quantity of debris had fallen. From amongst this there was picked up a specimen of Chabazite. This was very markedly the finest specimen which the writer has ever seen, and was nearly 6 inches in length by $2\frac{1}{2}$ in width. Its surface was covered with small crystals of pellucid blue Chabazite. Upon these were disposed some five or six crystals of the same mineral, in almost perfect crystalline relief, from $\frac{5}{8}$ to almost an inch in length, and of a pure milk-white colour and opacity. The edges and angles were absolutely sharp and untruncated.

At that part of the western coast-line which forms a promontory almost opposite to Thorshavn the writer found Pectolite in a vein

in a little cliff—or piece of rocky ground which faced the north. It was from 4 to 6 inches in width, and ran from east to west for a few feet. The mineral was broken out with great difficulty, as both it and the rock which contained it were of extreme toughness. It was lined on both sides by very minute crystals of Heulandite. The fibres or acicular crystals which formed it diverged from its sides towards its centre. Viewed by transmitted light it is singularly pellucid or porcellaneous. Much of this vein still remains.

THE GREAT CAVE OF NAALSÖE.

This locality, although it does not afford either many or rare species, must still be regarded as one of the most important in Faröe on account of the abundance of the specimens there found. These will be considered in the order of their nearness to the rock when occurring together in one and the same cavity.

Chabazite.—Though fairly brilliant from the high polish of the surfaces of its crystals, the specimens of this mineral which are here found cannot be regarded as particularly fine. The crystals are rarely over $\frac{1}{8}$ of an inch of uniform size; they are intersprinkled with small isolated hemispheres of Faröelite, forming a pleasing association.

Faröelite.—Under its old name of “Mesole” this mineral used to be confounded with Mesolite. In the year 1857 the present writer showed it was specifically different therefrom.* Dana thereafter showed that it was a super-silicated variety of Thomsonite. In the Hebrides true Thomsonite very rarely occurs; sometimes in not very distant association with Faröelite, from which it may be distinguished by the latter either occurring in solid spheres, or as a continuous coating of the rock, and very rarely, as in this case, forming stalactites.

The Thomsonite of this formation is in very minute and loosely aggregated sheaves of minute crystals—in fact this super-silicated variety may be looked upon as specially the Thomsonite of Tertiary volcanic rocks. It is probably the most frequently-occurring zeolite in the Faröes, and certainly so at this locality, there being hardly a druse which does not contain more or less of it. It presents itself here with two widely different appearances: in the

* *Philosophical Magazine*, January, 1857.

4 TRANSACTIONS—GEOLOGICAL SOCIETY OF GLASGOW.

first it is seen in more or less isolated globules approaching $\frac{1}{2}$ an inch in diameter. These are bluish-white in colour. This variety is generally unassociated with other minerals.

This was analysed and contained—

Silica.	Alumina.	Lime.	Soda.	Water.	Total.
42·50	28·06	11·35	5·60	13·02	100·53
42·60	20·00	11·43	5·63	12·70	100·36

The second analysis was one by Berzelius, probably also of a specimen from this locality. The second variety of Faröelite, namely, that investing druses (and these by the way are those generally of large size), has a somewhat yellow or brown tint; and this latter variety usually has as associates either Chabazite, Apophyllite, or Stilbite.

Native Copper, in thin sheets and minute octohedra, rarely is associated with the Faröelite.

Apophyllite.—This also occurs here of two very different appearances. In the first of these it is in very minute crystals not thicker than a knitting needle, and of the third of an inch in length. These are generally doubly terminated, and of the form *a p c*. They are usually perfectly colourless and transparent; but occasionally they have a pale green tint. It was in crystals from a specimen from this locality presented to Sir David Brewster by the late Dr. Macdonald, Professor of Natural History in the University of St. Andrews, that the former discovered the marvellously intricate and beautiful structure, as disclosed by polarized light, which he has described and drawn in the *Transactions of the Royal Society of Edinburgh*.

An extension of this structure has been seen by the writer in crystals collected here. These transparent crystals are usually attached to the Faröelite by the face *a*, and so can be easily detached. Occasionally they are superimposed upon each other with hardly any attachment.

In its second variety the Apophyllite occurs in much larger crystals, the average thickness being over $\frac{1}{8}$ inch by $\frac{1}{2}$ inch in length. These are milk-white and opaque, and are more or less embedded in the Faröelite. Specimens of all sizes, up to nearly a foot in diameter, can be obtained, and they form very interesting and characteristic illustrations of the mineral. The crystalline form is the same as that already mentioned.

Sphærostilbite.—This is the only locality in Faröe from which I have procured the substance or structure so named. It occurs in white nodules from the size of a marble to that of a very small egg. These are pure white and have an exceedingly rough and tufted surface. When broken, or rather when divided, the internal structure is seen to radiate from a centre. Close examination with a lens shows that they are made up of two minerals which are interstitially associated, and these two minerals are minute rough crystals of Stilbite and fibres of Mesolite which occasionally protrude from the surface of the spheres in downy tufts.

An analysis of the solid portion of the sphere gave a composition which was intermediate between that of Stilbite and Mesolite, while a quantity of the down gathered from the surface, which was snowy white and of a silvery lustre, and which the microscope showed to be quite pure, yielded on analysis—

Silica.	Alumina.	Lime.	Soda.	Water.	Total.
46·80	26·46	9·08	5·14	12·28	99·76

This is quite the composition of a typical Mesolite.*

Stilbite.—The specimens of this mineral from this locality are of great beauty. Two varieties also occur in the lower part of the cave and associated with Faröelite or with Faröelite and Chabazite; these are colourless, white crystals of the combination $a b m r$, or more rarely $a b c$; but from a cavity in the roof of the cave the writer obtained an unlimited supply of specimens up to nearly a foot in diameter, which were so studded with crystals of the first of these forms, and from an inch in length, that in the extracting of the specimens they fell over his shoulder like snowflakes, and were afterwards collected in hundreds. These crystals were of silvery lustre, and semi-transparent. When examined by polarized light with a low power in the microscope they exhibit a luminous cross tinted with faint colours.

It is worthy of record that when in the year 1857 this cross was shown to Sir David Brewster he instantly exclaimed,

* Vagöe and Dalsingpen are given as localities for Sphærostilbite by Dumeril. Vagöe I did not visit. At Dalsingpen I did not see it.

“I cannot understand or explain that cross unless by the supposition that it is a compound crystal.” He thus anticipated Langemann and Lasaulx' discovery by many years.

Many of the druses in this cave are tubular in their proportions, running nearly horizontally into the rock.

Hypostilbite.—This substance, regarded as a species by Beudant and Dumeril (and whose analyses, it must be admitted, agree admirably), I could not satisfy myself to be established. Specimens which I had set down as being probably that to which the name had been given were found in the cave of Naalsöe. These, however, upon close examination proved to be only unusually large spheres of Sphærostilbite of a somewhat more solid and radiating structure, and larger size than the average. Analyses of portions from the centre and from the outside also gave results differing as much as from 50 of silica in the centre to 56·5 at the circumference.

The late Alexander Rose informed me that Count Vargus Boedemar, who, though he had collected both in Iceland and in Faröe, had never seen the mineral, and was doubtful as to its specific individuality.

Along with the late Mr. Alexander Bryson, to whom they were gifted, I carefully examined the specimens collected in Faröe by Sir George Mackenzie. There was nothing which in the least corresponded with it. Professor Jameson knew nothing as to it. And in no museum have I seen a specimen whose ticket bore the name. I therefore entirely doubt its specific individuality.

Upon the east side of the island, at a spot somewhat south of the lately-erected lighthouse, dendritic Native Copper occurs. It is always invested by Faröelite.

BORDÖE.

South of the harbour of Waii, or Hoiwig, there towers a lofty hill—Haafeld—capped with an almost inaccessible cliff. The debris which has fallen from this cliff when broken up yielded specimens of the following minerals:—

Chabazite.—In fine specimens of the primary form.

Stilbite.—With an unusual development more resembling

FORSTER-HEDDLE—MINERALOGY OF THE FARÖE ISLANDS. 7

radiating crystals of Natrolite than any other mineral. The following analysis, however, proved it to be Stilbite:—

Silica.	Alumina.	Ferric Oxide.	Lime.	Potash.	Soda.	Water.	Total.
58·79	14·613	·47	9·534	·232	·324	17·298	101·261

The specific gravity was 2·103. This Stilbite was underlaid by small crystals of Heulandite. It itself was arranged in rosette bundles of crystals about $\frac{5}{8}$ inch long by $\frac{1}{16}$ in the other directions, and to the eye they appeared to be square prisms.

Levyne.—As is almost invariably the case this mineral here occupies druses, of which it is the sole occupant. Chabazite here

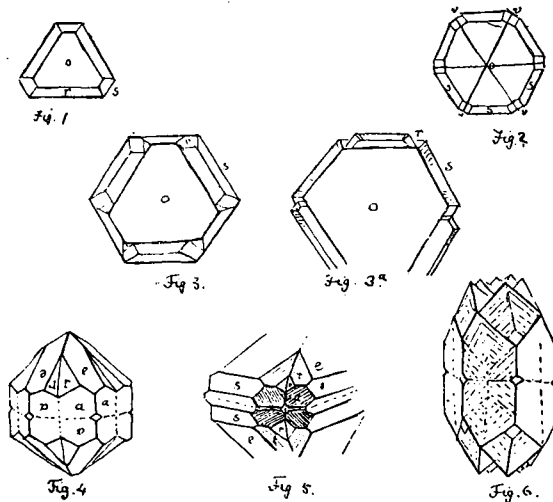


Diagram 1.—Crystallization of Faröe Minerals.

lines other druses, but the two are never associated. Although the crystals of Levyne are here small, yet the druses containing them are larger than any holding this mineral which I have seen elsewhere, either in Faröe or at other localities. Some of these druses attain a length of two inches. There are crystals of *o r s* (fig. 1); twins of *o s v* (fig. 2), simulating twins of Gmelinite; crystals of interpenetration of two individuals of *o r s* (fig. 3); but the ordinarily occurring form at this locality is a twin consisting of one large individual and three small ones,

which are much thinner than the first—the combination found in all is *o r s* (fig. 3*a*).

Heulandite is also here found in small crystals, of somewhat unusual development.

OSTERÖE.

Lambavig.—This bay being open to the south-east must be approached from Glibre. The west anchorage is inside of Sjør, in Köngshavn. In passing over or round the hill which lies between Glibre and Lanshavig, a cliffy escarpment will be seen on its north-eastern side. Here may be obtained specimens of *Heulandite*, *b s t c*, overlying *Celadonite* and generally underlying *Chabazite* of the primary form. *Chabazite* occurs here in most interesting forms. The primary *r* is usually twinned; other forms are *r e a* twins (fig. 4); twins of *r t e s a*, similar to fig. 4 of Greg, but having six crystals of intrusion on the *t* faces of the larger twin, as shown by the double re-entering angles at *a* (fig. 5). Then there are also twins of *t a* and *t a s*. One wonderfully intricate twin was found. Upon a simple large twin of *r t s a* there are set down in a rosette form twelve small crystals of *r t a*, with their *r* faces nearly parallel to *t* of the larger twins, and twelve minute crystals are set down on the *r* faces of the first twelve, eight of these being parallel with the edges, *a a*, of the large twins (fig. 6).

About the centre* of the south shore of Lambavig is situated perhaps the best locality known in Farøe for chalcedonic druses, as distinct from *Onyx*. These, however, are now rare and must be searched for by sounding the rock with a ponderous hammer. In a small cave here the writer laid open a large druse, which yielded the finest specimens of *Chabazite* which he has seen, except the specimen from Naalsøe. The crystals, from $\frac{5}{8}$ inch down to $\frac{1}{4}$ inch, were milk-white, and were sprinkled over a basement layer of *Celadonite* sheathed in transparent *Chabazite*, microscopic in the size of its crystals. The cavity was filled with several gallons of water.

Eide.—In the neighbourhood of this northern village there are

* Sir George Mackenzie's locality, seemingly a still better one, was near the hamlet of Lambavig.

FORSTER-HEDDLE—MINERALOGY OF THE FARÖE ISLANDS. 9

two mineral localities. This one lies upon the eastern shore of the promontory of the Kodlin. Here Gyrolite in pea-sized globules is to be found, associated with indifferent specimens of other minerals.

The summit slopes of the hill lying immediately south of Slatteretind is sprinkled with debris, amongst which may be found much Onyx and Girasol Opal of white and yellowish colours. Examination with the microscope discloses that the milkiness of the Cacholong, which causes the white banding of the Opal, is due to an intermixture of Girasol Opal with Chalcedony in ovoidal forms, and radiating fibrous structure. The Opal from this locality is so fragile that it cannot be used for jewellery.

A cave at the east foot of the Kodlin, only accessible by boat, afforded fine specimens of pellucid Calcite.

STROMSÖE.

A locality called Hoiwig, some three miles north of Thorshavn, yields indifferent specimens of Chabazite, Heulandite, and Faröelite.

Dalyspen.—This locality is best approached from an anchorage at the head of Halbaksfiord, and ascending by a stream which descends the hill on the left until Norderdahl is reached. The best mineral locality is about the cliff-edge westward of this. This is the locality generally given for Levyne. Little else is to be found, and the specimens are small at the best.

Odnadahlstint, Kollafjord.—Good holding ground can be got a little above Sjør, and although the hill itself may be somewhat nearer to Thorsvig, yet as the Opals got here are regarded as private property, and as the proprietor of the ground resides at Sjør, it is right to obtain his consent, and well to secure his guidance in the search for them.

The Opals of Faröe are all of the Girasol variety—at least the writer has never seen any with internal fire. For the most part they are milk-white, and for the most part they are valueless—as from, apparently, some tension which they retain for some time after they are extracted from their matrix, they crack and occasionally fly to pieces while being polished. The only fragments which the writer has succeeded in cutting and polishing were such as had lain exposed to the weather; some of these by transmitted sunlight had a feeble amount of red

brilliance; and such as had a narrow vein of brown tint might, if in sufficient amount, be utilised for such ornaments as bracelets. The usual colours are milk-white and faint yellow. Fire Opal is said to occur, and in the surrounding hills—for Odnadahlstint is merely the centre of a somewhat wide space in which they are found—the specimens are, however, more of the nature of a reddish Wax Opal, and the druses which they fill are seldom of the size of a bean.

From the above somewhat disparaging remarks upon the Opals of Farøe there are two varieties which must be excluded, as each is in its own way altogether unique and magnificent. As I have not myself found them either here or in any part of the islands I cannot give their locality. The first is the Green Opal of Farøe, the colour being due to a wonderfully uniform admixture of Celadonite; the second, the Banded or Ribbon Opal in which a uniform mass of milky-white has a band of translucent reddish-brown. Both of these are unrivalled.

Kvalvig.—This is the anchorage from which the cliffs surrounding the bay of the same name may be examined. The escarpments surmounting the tillage at Stromness yield Chalcedonies, Onyx, and all their varieties in great amount. These are generally to be extracted in the form of short pillars, the Onyx banding being transverse and always strictly horizontal—the stalactites, where present, equally strictly vertical. It was from these cliffs that were obtained what the writer regards as the finest specimen of Onyx ever known.

From the banks of a stream facing these cliffs on the south of the valley, and about 300 feet above sea-level, several solid druses of Okenite from 3 to 8 inches in diameter were extracted. The fracturing of the largest of these masses almost defied the efforts of half-a-dozen men and a 28-lb. hammer.

Saxen.—This village lies some eight miles to the north-west of Kvalvig. Half a mile nearer the latter than Saxen there was found a cavity about one yard in two dimensions, which was lined throughout with straw-coloured crystallizations of Stilbite. These occurred in huge crystals of sheafy arrangement about 8 inches in length by 5 in width. An attempt to extract it whole failed only at the last moment.

Tjornevig.—The mineral locality to which I have given this

name lies almost immediately opposite to the village of Eide in Osteröe.

Immediately facing the most promising landing-place there was found a druse some 9 or 10 feet in length, by about 2 in width and 1 in depth—resembling, in fact, the cavity of a slipper. One end, the toe of the slipper, had been laid open, so that the minerals which lined its inner surface were there, and for some distance inwards, defaced by a green deposit or growth. Upon being laid open the cavity afforded an ample supply of the two minerals, Heulandite and Scolecite. The Heulandite was of most unusual appearance. They showed only the faces $m t s b c$. The first three of these faces invariably presented themselves—and were almost of equal size. b was lengthy, from m to m , and c from t to s ; so that the crystal assumed somewhat of the character of a prism $m c$ with a termination $t m s$ —or a superposition of crystals upon the face a .

Scolecite.—From the surface, or, it might almost be said, the summit of these crystals of Heulandite, there sprang in this cavity radiating brushes of crystals of “Needle stone” of extreme tenuity, transparency, and brilliancy. These brushes were over 2 inches in length, and where the sea had not penetrated to them, they were of great beauty. All were bound together at the extremity of the brushes by minute crystals of Stilbite, which lay as if dusted upon them.

The small cliffs which lie to the south-west of this spot are very scoriaceous or loose in structure. The vacuities are filled with radiating Faröelite to such an extent that one-half of the total weight of the rock must be due to that substance.

Along the shore to the south of this locality, and near to a stream about half way to Haldervig, the rocks contain a fair amount of Apophyllite. One specimen of this mineral here found was very much the finest got in the islands. It was, moreover, unique in the size and in the relative proportions of its faces. The crystals were from $\frac{1}{2}$ to about $\frac{2}{3}$ of an inch in each direction. The form was $p a e$ and these faces were of nearly equal size. The usual specimens which are associated with Heulandite much resemble, both in proportion of their faces and in general appearance, the ordinary Icelandic type of the mineral. Large masses of crystalline Stilbite here obtained contained cavities lined with

delicate crystals of Scolecite, upon which were perched minute crystals of Stilbite.

Just as the hamlet of Haldervig comes in sight the rock becomes very wackenitic, and from it was wrenched a druse nearly a foot in one dimension, lined throughout with Scolecite. This from exposure was much weathered, but must originally have been of great beauty, as the termination of each crystal—these being two inches in length—was surmounted with a radiating and silvery-lustred coronet of Mesolite. Doubtless the tearing down of a quantity of the rock would be rewarded by the laying open of other druses.

Westmanshavnsfiord.—The shore between Eilsness and Quivig yields occasional druses. From one there was obtained a singular and unique pseudomorph. It was not analysed, but appears to be Mesolite after Apophyllite. The colour is that of cream, and the combination *a c r* with occasionally a small *p*. When within about two miles of Quivig I found a flat druse—not more than a few inches in depth, but some 5 feet by 4 in its other dimensions—which was lined throughout with crystals of Heulandite the size of grains of rice, and of the usual combination *b c m t s*. On account of the dullness of the crystals and the absolute uniformity of their size they possessed little beauty.

A loose block of Moss-agate was found near Quivig of about 1 foot 9 inches by 1 foot. In some respects it was of unrivalled beauty. It was a portion of a vein of some 5 inches in thickness. The colour of the "Moss" or Celadonite which formed the cores of its innumerable stalactites was very poor—a pale straw; but the ramifications and interwindings of these stalactites, and the internal lustre of the Chalcedony which formed them was unrivalled. When sectioned transversely to the vein some of the spaces between the stalactites were found to be filled with Onyx—the banding by Cacholong being so disposed as to show that the vein had been a horizontal one. Numerous small druses of red Wax Opal occur in this neighbourhood.

Waagoe, Midvaag.—The north shore of the bay inside of Sandevaag is cut by a vein of what appears to be white Saponite. The analysis of this was overlooked, probably from the indifference of its appearance.

Busdali Foss.—The rocks on each side of this waterfall—which

FORSTER-HEDDLE—MINERALOGY OF THE FARÖE ISLANDS. 13

are somewhat precipitous—yield abundance of crystals of Stilbite, the chief feature of which is that in whatever form they take they somewhat overfill the druses in which they occur. *a b c* is the most commonly occurring combination; and a very fine specimen of *a b m c r* was also found. The crystals are of large size.

Sorvaagsfiord.—The shore-foot at both sides of the head of this fiord is abundantly studded with broken druses filled with radiating Scolecite. The specimens are dull and not fine.

Tindholm.—On the north shore of this island, and near the spot where a dangerous reef of rocks runs off to the north-west, Analcime occurs in crystals about 1 inch in size, which were much the finest I found in the islands, where this common zeolite is very rare.

This island is barred from its base to nearly its summit by successive deposits of Peat. One of these at the east end of the island, and at a height above the sea of about 100 feet, I observed to be studded with isolated white crystals, which on being extracted were found to be Heulandite of the combination *b c m s t*. They were fairly lustrous. This seeming to me to be an extraordinary mode of occurrence I examined the peat carefully. Its appearance was quite that of ordinary peat, only that it seemed denser; this the overlying 400 and odd feet of rock might well explain.

There is in the island of Graemsay in Orkney what more resembles a *vein* than a *bed* of peat of great density, the result, apparently, of a fault with an overlide at the spot.

I found there was sold in London a compressed peat for the lighting of fires.

I therefore analysed the three varieties as follows:—

	Graemsay.	Farøe.	London.
Sp. Gr. - - -	1·31	1·27	1·2
Water - - -	6·06	9·44	3·94
Volatile at 240°	6·88	4·16	6·29
Gas - - -	15·52	49·40	56·05
Carbon - - -	·62	20·50	28·08
Ash - - -	70·92	16·50	5·64

There is thus nothing specifically anomalous in the composition of the Tindholm peat.

It is not conceivable that these crystals were formed after the usual mode of growth of zeolites, namely, by the endosmose of the material of decomposed plagioclase felspars into shut cavities, inasmuch as no such cavities here exist. The most reasonable explanation of their presence would appear to be that, during the growth of the plants which formed the peat, their roots had insinuated themselves into cavities of the decomposing surface of the sustaining rock, and the loosened crystals had been elevated by the upward growth.

Mygganaes.—I mention this island, not for its mineral wealth, for I found nothing worthy of note in the small part of it which I traversed, but on account of its containing the finest marine pot-hole which I ever saw. This is at, or rather forms, its landing-place; and it is somewhat doubtful if whether any one could land upon the island at any other spot, for if the pot-hole does not form the landing-place, it at least forms a dock in which boats can lie in safety at all times, except during a gale from the south.

The rock is one of only moderate hardness, and in some hollows of its surface fragments of basalt dykes have in far back times commenced, when swirled by the waves, to grind a circular cavity, which during the lapse of ages has been increased to its present dimensions—somewhere about 80 feet in length, nearly half as much in width, and perhaps three fathoms in depth. At its bottom are to be seen the numerous boulders which, during every gale from the south, must still be acting as pestles against its sides, which are everywhere undercut. As its eastern edge is within about a yard of an inlet of the sea, and the intervening rock only a few inches above its average height, boats can readily be hauled over and lie in safety. Filled at every tide it retains the water like a dock.

Hestöe.—The best part of the shore for minerals in this island is the south-west. The writer was, however, prevented by unfavourable weather from landing at that part, and was confined to the northern half of the east side. There is a brilliancy about the zeolites of Hestöe which is above that of other localities in Faröe, and most of the druses have a Celadonite skin—not seen elsewhere in the islands. Hestöe is the only locality for that violet-coloured variety of Calcite which resembles Chalcedony, and is called Brunnerite. It occurs in

FORSTER-HEDDLE—MINERALOGY OF THE FARÖE ISLANDS. 15

very squat rhombs, but the form of these, from the roughness of their faces, cannot be accurately determined. It is disposed generally in isolated crystals, but also in clusters, on the summits of crystals of Apophyllite.

The Apophyllite of Hestöe is the most brilliant and pellucid in the islands, probably in the world. It occurs colourless, pink, and green; all are pellucid, and it is generally unassociated with any other mineral, except the above-mentioned variety of Calcite. Its combinations are *p*, *ap*, *a p c*, *a p r*.

Heulandite.—This occurs in two varieties. The first is in somewhat large crystals of a fine pink colour, which form the bases of druses of Apophyllite. Their form is the usual one. In the second variety the crystals are small, not half of the size of rice-grains, but of extreme brilliance, and stand isolated and almost unattached on the surface of their matrices. Their combinations are *b s t*, *b s t c*. The lustre of *b* is very high.

Along the whole of this portion of the shore of the island, and also along its northern shore, druses about the size of a closed fist occur; these have a skin of Celadonite, and are lined throughout with a continuous sheathing of crystals of Analcime of a pale blue tint. These crystals, which have a high polish, are of uniform size—hardly that of a small marble. They are occasionally penetrated by delicate acicular crystals of Scolecite, so as to form an interesting combination. They present no other than the usual form.

[Owing to the regretted death of the author before this paper was printed, the proofs have not received the benefit of his supervision. Fortunately, however, Mr. Goodchild, F.G.S., who has lately (1901) edited Dr. Heddle's "Mineralogy of Scotland" in two fine volumes, undertook to read the proofs and to re-draw the author's sketches of the crystalline forms (reproduced on page 7). Ed. 1902.]