XIX.—*Collections relative to Vitrified Sites.*

[*Continued from page* 201 *of the present Volume of the Society's Transactions.*]

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[*Read to the Society December* 12, 1831.]

My reason for preferring the use of the term Vitrified Sites to the more popular one of Vitrified Forts, has been explained in a former dissertation. It was one of the conclusions to which I arrived, that it would be as easy to show from various examples, that most of the oldest defences, or *Duns*, of Scotland exhibit no vitrification whatever, as that when vitrification occurs, it is not restricted to the precise limits of an area characterised by rude ramparts of stone;—and hence, that the term Vitrified Fort is too often the language of error, which might with considerable advantage be exchanged for the more comprehensive and untheoretical one of Vitrified Site.

It was also pointed out that some of the sites where vitrification is found were ancient places of rendezvous for tribes or clans upon any public occasion whatever of peace or warfare:—that many vitrified sites might, from historical and internal evidence, be shewn to have resulted from beacon-fires formed by piles of wood, after the manner described by Olaus Magnus, Snorre, and other northern writers:—and that other public occasions, festive or religious, might have given rise to the same effect of vitrification.[1]

[1] I am convinced that it can only arise from inadvertence that I have been lately represented by my friend Mr J. D. Forbes, in a paper published by him in Dr Brewster's Journal, upon one of the vitrified forts of the Western Highlands of Scotland, as advocating *exclusively* "a beacon theory." If he had read my dissertation with any degree of attention, many of the remarks which he has gratuitously made might have been spared, and he would have found that he was only repeating the observation which I had previously advanced, that other occasions (which I particularly specified) might have given rise to the same effect of vitrification; and "that if we are entitled to suppose that more than one ancient observance might have induced the vitrification in question, we are authorized in the expectation that the character of the sites in which vitrification occurs will be found as diversified as the multifarious national causes to which the effect may be possibly ascribed." (*See the* 181*st page of the present Volume.*) In fact, I cannot find that I am actually opposed in this paper upon any conclusion whatever which I have advanced, and am therefore happily spared the necessity of a controversy with a gentleman for whom I have every esteem, on account of the talents and zeal which have so early signalized his scientific career.

[2] "To me," says Mr Cordiner, with much quaintness, "it would seem highly improbable that ever an application of fire had been made to cement buildings, however others may have been amused with the theory. But should any body be disposed in future to make such an experiment, I adjoin the most approved receipt. The method is simple:—Take a mountain, whose summit contains a moderate area, bounded as much as possible with precipices, except at the place you are to enter. On the brink of these precipices place large stones, the drier the better, *quant. suff.* and let the interstices be filled with vitrescible iron ore: to this heap make a backing of loose stones, piled carelessly *behind the said brink;* then build a stack of wood *round the whole outside* of the wall, kindle a fire, and the business is done. Should any dull fellow object to the foundation for the backing and fuel, he may be told it is among the *artes deperditæ*, unless preserved by the academy at *Laputa*, who have the secret of condensing air, and building houses from the roof down to the foundation."

To the theory of Williams I have been certainly hostile, from the difficulty of conceiving how a fort could possibly be so vitrified as to add to its defence, as well as from the conviction that a fort *perfectly* vitrified does not exist in Scotland. Hence I have yet to learn the mode in which an efficient vitrified fort is to be made.[2]

These various conclusions remain unaffected by the observations which I have since made during the course of prosecuting this inquiry. There are others, however, though at the same time subordinate ones, which require to be modified by the fresh discoveries which have come under my notice. To these I shall confine myself in the present continuation of my researches concerning vitrified sites.

In my observations on the theories which have been proposed to explain the vitrified forts of Scotland, it was stated, that "from the information of Snorre, we were entitled to expect that vitrification would be found on the mountain tops of Norwegian provinces; but that I was not aware that Scandinavian antiquaries had yet pointed out their existence." I also remarked, in another article inserted in the *Archæologia Scotica* (vol. iv. p. 184), that the establishment of such a fact would throw no inconsiderable light upon the history of Scottish vitrification.

The solution of this question I have not yet obtained; but during the summer of 1831, I arrived at the knowledge that vitrified sites exist in the ancient Norwegian colony of Orkney, which is quite as satisfactory.

During my visit to these islands, I must confess that I had but little expectation to find in them such a confirmed vitrified site as I have now to describe. Having many years since explored Shetland, the sister province of Orkney, and examined most of its ward or watch-hills, without detecting any marks of vitrification upon them whatever; having also found in every topographical account of Orkney which I have consulted, a perfect silence regarding the existence of vitrified remains, I came to the conclusion (certainly a precipitate one) that it was in vain to look for vitrified sites where luxuriant woods had not subsisted; that although we read in the *Orkneyinga Saga*, of numerous beacon signals having been lighted up in Orkney and Shetland, yet that, as these islands, from remote historic times, had been destitute of forests, no fire had been raised of sufficient intensity to leave any marks of vitrification whatever upon the mounds of stone on which the inflammable materials had rested.

This conclusion I must now very materially qualify. It was in the museum of Mr Traill of Woodwick, a scientific gentleman, who has formed a very interesting collection of the natural products of Orkney, as well as of its relics of antiquity, that I observed some very large specimens of vitrified stony matter precisely like that which is obtained from vitrified forts. These, Mr Traill informed me, had been sent to him by Mr Urquhart of Elsness, in Sanday, who had obtained them from the ness or promontory which imparts the name to his estate.[3]

After these prefatory remarks, I shall proceed to describe the vitrified site of Elsness, which I visited without delay.

The Vitrified Cairns of Elsness, in the Island of Sanday, Orkney.

For three or four centuries, that is, from the 10th to the 14th, the Scandinavian province of Orkney, always impatient of the control of the mother country, had no

[3] Elsness, as I shall show, is not the only place in Orkney where vitrified remains have been since found. While this memoir was passing through the press, I was favoured by Mr Traill with some particulars regarding another vitrified site, viz. in the Island of Rousay, which will be inserted in a future *fasciculus* of the Transactions. I have also this moment received a specimen of vitrified matter, which was collected by the Rev. Charles Clouston of Sandwick, from the summit of a hill above Clowegar, between Stromness and Sandwick.

enemies so formidable as the kings of Norway, who frequently paid them hostile visits, to reduce them to submission. Against these incessant invasions the Orcadians were generally well prepared, by keeping up a careful watch. The means by which this was accomplished has been explained in my former Dissertation (see page 182, &c.) It was stated that the Northmen instituted in every country where their arms prevailed, perfect systems of beacon-fires; that the wardenship of them was enforced by the most rigorous laws; that edicts to this effect appear in many early codes of the North of Europe, particularly in the Leges Gula-thingenses of King Magnus of Norway, where we find that the Bonds were plighted during the time of war to be prepared with watch-fires in places where the same had been lighted up from old time; and that, according to Snorre, King Haco the Good caused large trees to be formed into piles, and to be so placed as to be visible from mountain to mountain, with the view that the intelligence of a hostile invasion might in the short term of seven days travel from one end of his kingdom to the other.

An important quotation in illustration of this practice was given from Olaus Magnus; in addition to which I have now to observe, that still further information upon the subject is to be found in a commentary of Olaus Verelius, printed at Upsal A. D. 1664, "in historiam Gotrici et Hrolfi Westrogotiæ quondam Regum," where, in animadverting upon the expression of "*Han liet hlada vita*," he observes, "Vitar sunt aridorum lignorum strues, quæ in maritimis scopulis incendentur, ad significandum hostium adventum. Vocantur etiam *boetar* et *vardboetar*. *Vpl. LL. Kongb.* 12. *fl.* ubi et triplex vigilum custodia notatur: *bya. vard, strandavard, boetavard.* silicet publica vigilia in prædijs, in litore, in montibus. *Hels. LL. Kongsb.* 9. *fl. bergsvard ok næsia vard.* custodia in montibus et litorum extremitatibus. De publicis his ignibus ita Barel. Argen. lib. 1. *Collucent in camporum tumulis publici ignis, quos nefas accendi, nisi regio jussu, et cum gerendis rebus celeritatem salus publica imponit: hos ignes angaros vocant.* Vide item Snorr. Sturl. in vita Haquini Adalsteins fostra."

The origin of this system of beacon-fires having been explained, I shall next remark, that, in the Northerly Isles of Orkney, signals of alarm were particularly required, where they were so distributed that, upon the first approach of an enemy from the shores of Norway, instant intelligence might be conveyed to a fleet anchored in a convenient port, and ready to put to sea, there to contend with its foes long before they could possibly land.

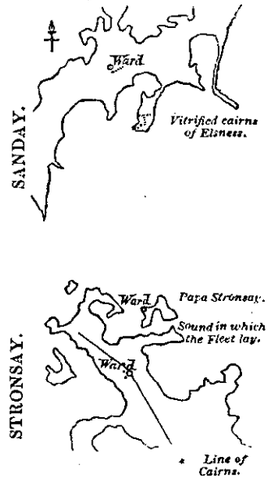
These simple historical circumstances are abundantly unfolded to us in the *Orkneyinga Saga*. Our inquiry, therefore, becomes comprised in the following questions: *First*, In what part of Orkney were its ancient gallies most commonly moored? And, *secondly*, In what manner were timely signals conveyed to the fleet thus moored, to arm and put to sea?

The first of these questions is soon resolved. It is evident that, as hostile attacks were chiefly to be dreaded from the north, the most northerly harbour which could

afford good shelter and depth of water for ships, provided also that it was situated on the east coast of Orkney, would be preferred; as these two circumstances of situation united would be requisite for readily clearing out to oppose a hostile fleet advancing in its proper course from Norway. Now, the most northerly island, lying also to the east of the Orkney group, is North Ronaldsay;—but here there is no harbour whatever. Nor is the island of Sanday, the next in succession, much more fortunate; its navigation being greatly obstructed by surrounding shoals of sand, whence the island has derived its name. In short, there is no port whatever which could have afforded any convenience to early war-ships, required upon the approach of an invading fleet to instantly put to sea, more north than the sound of Papa Stronsay. This harbour, then, which lies due south of Elsness in Sanday, being divided from it by a channel a league and a half across, must, from necessity, have been selected as the ancient Portsmouth of Orkney. No other situation could have been so eligible for instant embarkation into the Northern Ocean;—which superior advantage is even acknowledged at the present day, by its being the only harbour in the Isles of Orkney which is deemed a convenient one for the prosecution of the North Sea fishery of the herring.

The site of the ancient Portsmouth of Orkney being thus established, the next object which I have is to show through what medium telegraphic signals, which consisted of beacon-fires, were conveyed to the fleet thus anchored in the sound of Papa Stronsay.

Shetland, which yielded a more willing obedience to Norway, was frequently in league with this power against Orkney; and as hostile fleets were often reinforced in the more loyal province, the intermediate island, named Fair Isle, of difficult access except to boats, was firmly retained by the Orcadians, and converted into their most northerly signal station. From this site, an alarm fire, which would be first hailed in North Ronaldsay, would be answered by its inhabitants kindling a fresh flame, in order that the intelligence might spread to Papa Westray and Westray on the west, and to Sanday on the south. Sanday would propagate the alarm to the fleet which was anchored in Papa Stronsay, with a signal of the number of hostile vessels approaching the Orcadian shores. These particulars, as we are assured by divers writers so late even as the commencement of the last century, were usually signified by the number of fires which were lighted up. In order also to complete the efficiency of this telegraphic system, every Scandinavian province had its laws, whereby watchmen were placed at the various *wart hills* of the country as

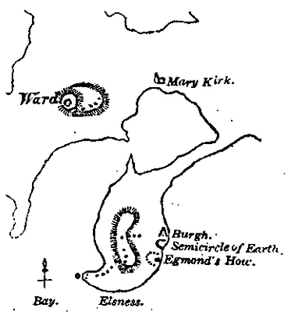


the Ward or Vord Hills of Orkney were named, who were required, under the severest penalties, to be constantly on the alert to transmit a signal of alarm to a fleet, or to the chain of beacons of which it might form a link. Thus it is stated by Martin, in his description of the Isle of Harris, which the Norwegians had colonized, that "there are several heaps of stones, commonly named Karnes, on the tops of hills and rising grounds, upon which [the inhabitants] used to burn heath as a signal of an approaching enemy. There was always a sentinel at each Karne, to observe the sea-coast; the steward of the Isle made frequent rounds to take notice of the sentinels, and if he found any of them asleep, he stripped them of their clothes, and referred their personal punishment to the proprietor of the place."

After having thus glanced at the origin of the ancient watch-fires of Orkney, I shall now describe the vitrified cairns which are observable in the island of Sanday, at Elsness.

Elsness, lying to the south of the Island of Sanday, is a promontory rather more than a mile long from north to south, and about half a mile broad. It was evidently the stronghold of a Scandinavian chief, one of the ancient sea-kings, being dignified by the presence upon it of the remains of a burgh, or circular fort, as well as of a large sepulchral tumulus, which bears the name of Egmond's How, and of a number of smaller cairns ranged near it in a semicircular form, which, perhaps, were likewise the ancient resting-places of the brave. Another contiguous site, which, by means of a low continuous mound of earth, is made to take the form of a large crescent, indicates by this particular structure the place of a *weaponshaw*, or the site where a tribe was accustomed upon any hostile alarm to repair fully armed. Again, about three quarters of a mile to the north of Elsness, close to the ancient church named Mary Kirk, may be traced the limits of an ancient ting, where, in Pagan times, the functions of the priest and the judge were combined.

But the most interesting remains of which Elsness can boast are the *beacon cairns* with which it is studded over;—many of these exhibiting unequivocal testimony of a vitrification quite as intense as is to be traced in any vitrified fort of Scotland.



These round cairns, of which I counted more than twenty, are from three to five yards in diameter, and elevated from two to three feet above the surface of the ground. The stony fragments of which they are composed, which had evidently been collected from the beach, consist of what geologists would name an argillaceous schist; being, in this instance, an equivalent of the Mansfield slate. Their fusibility they have chiefly derived from the felspar, or rather the alkali, which they contain.

The bituminous matter which may often be found to enter into their composition, and which, if constantly present, would materially add to their fusibility, is but an occasional occurrence.

Altogether, these mounds answer to the description (which I have already quoted) given of the ancient beacons of the Isle of Harris. "There are," says Martin, "several heaps of stones, commonly called *Karnes*, on the tops of hills and rising grounds on the coast, upon which the inhabitants used to burn heath as a signal of an approaching enemy." There can also be little doubt but that the number of cairns upon which, during any single occasion of alarm, heather or any other inflammable materials were burned, must have corresponded with the number of hostile vessels approaching the coast of Orkney. This supposition is strengthened by the evidence of Wallace, who has affirmed, that even so late as the year 1700, "the people of Orkney had in every isle a wart-hill or ward-hill, which is the most conspicuous and elevated part of the isle, on which, in time of war, they keep ward; and when they see the enemies ships approaching, they put a fire, thereby to give notice to the adjacent isles of the nearness of the enemy, and to advertise them to be on their guard, or to come to their help: this they distinguish by the *number* of fires."

Upon the possibility, however, of mere heather to produce an effect which I have been hitherto only disposed to attribute to the combustion of large piles of wood, I will not yet give an opinion. Wood is only found in Orkney in a fossil state, that is, buried in peat; and whether this substance was employed, or peat itself, which is by far the most abundant fuel in Orkney, or dried sea ware, or heather, or a mixture of two or more of these combustibles, I am not now prepared to discuss; but shall merely remark, that the result produced upon the loose stones, which in the form of cairns supported the fuel, is most astonishing. In some instances the vitrification has extended to the very bottom of a cairn, showing an almost entire compact mass. Nothing, in short, can display the effects exhibited more satisfactorily, than by contrasting them with the appearances induced on subjacent stones by the fires of the kelp-burners of Orkney; where, if vitrification is at all produced, it is slight in the extreme, and rarely cements stones to an extent exceeding a few inches. This difference would indicate, that a vitrification, in order to be considerable, must be a work of time;—or, in other words, it would demand that the same cairn, for perhaps a century or more, should be the unvaried site on which beacon-fires were kindled.

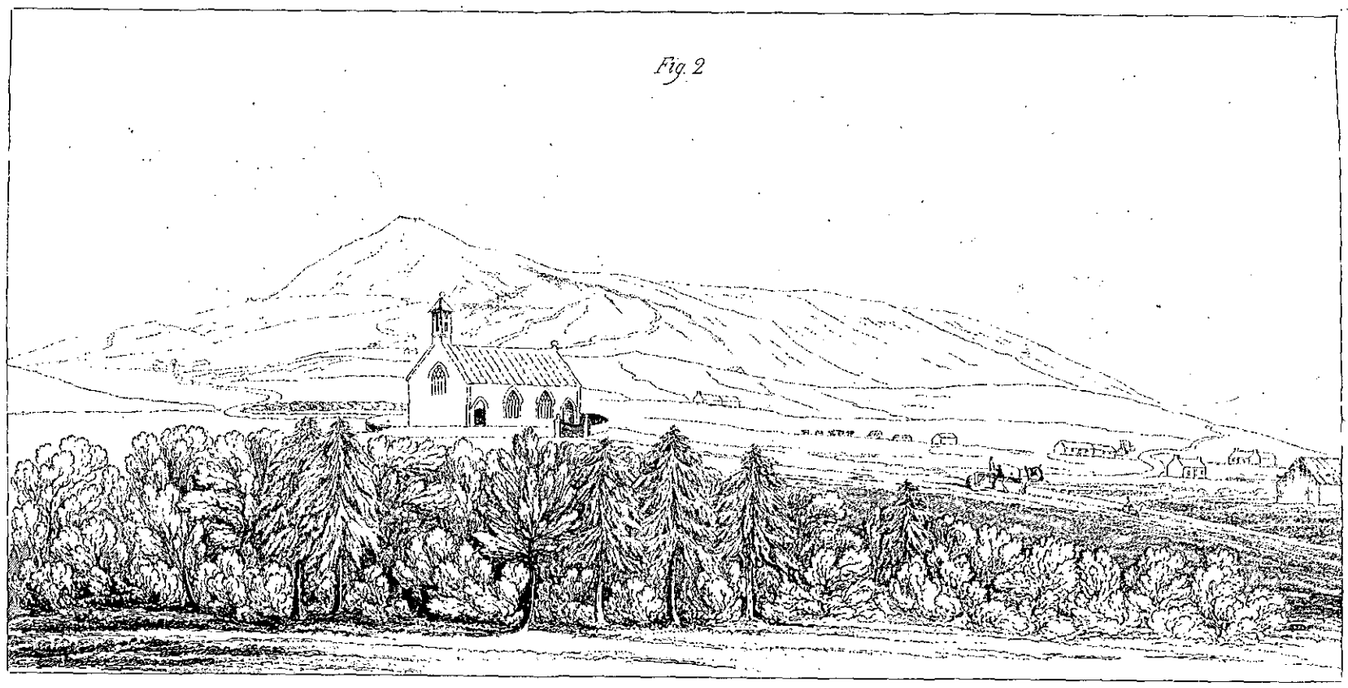
The cairns of Elsness are not, however, all vitrified alike. On some of them I could not detect a single burnt stone, while, in other instances, a cairn would almost put on the appearance of one compact burnt mass. Too many of them also were concealed by a thick sward, so that their character for vitrification still remains indeterminate.

Lastly, to the north of the small island of Papa Stronsay, a higher cairn than common, intended as a look-out place, appears, with the evident foundations of a building

Fig. 1

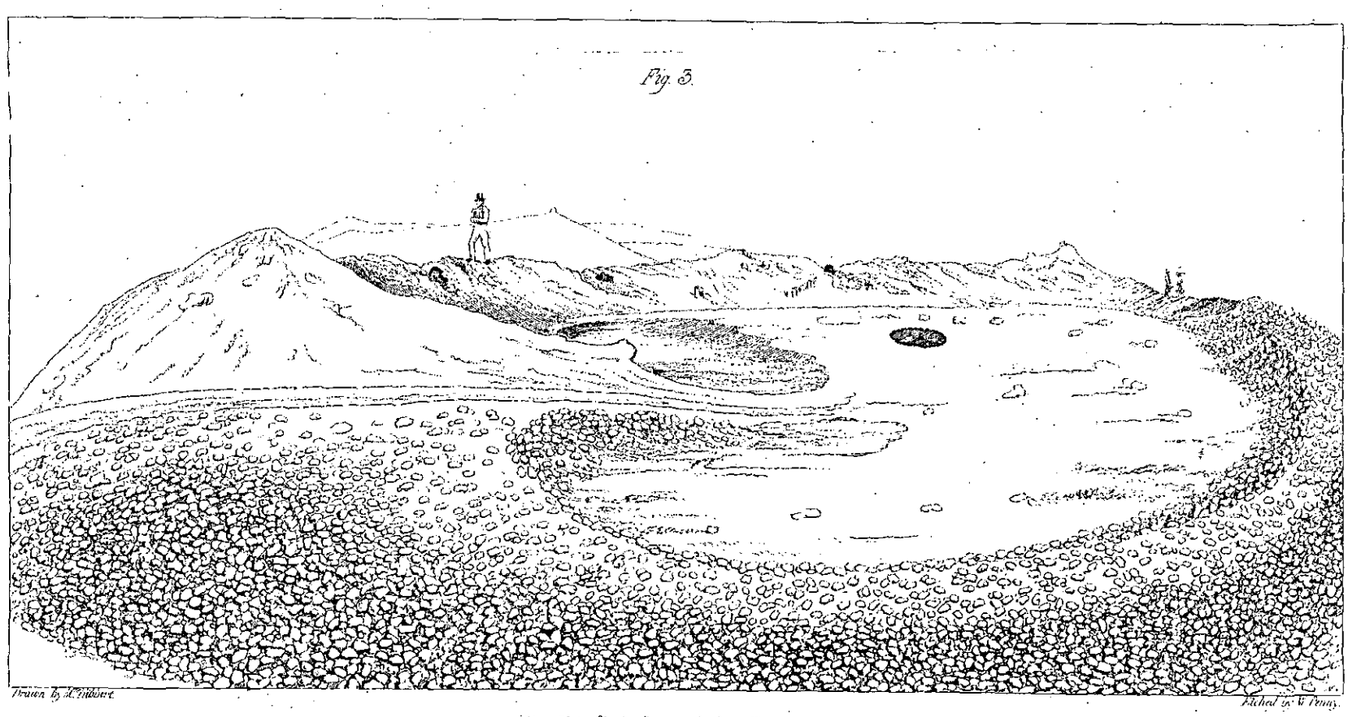
a The Sound and b The Island of Papa Stronsa c Elsness d North Ronaldsay e Fair Isle

Fig. 2



View taken from the Village of Rhynie of the Hill of Noth

Fig. 3.



Drawn by A. Gilbert. Etched by W. Byrne.

The Vitrified fort of the Top-o-Noth

near it, which, I have little doubt, formed the residence of the watchman whose office it was, upon the fires of Elsness being kindled, to instantly warn the fleet which was anchored in the contiguous sound.

The historical view which I have thus taken was familiarly, yet beautifully, illustrated when I visited Stronsay. On the opposite shore of Sanday several distinct kelp kilns were lighted up, which were well calculated to impress the imagination with a number of beacon-fires; while the fishing-vessels then moored in the sound, like so many war ships, added a show of reality to the illusion. The number of the fires I could distinctly count, but the atmosphere was then clear. Under different circumstances, I can account for the disappointment occasionally expressed by the ancient Northmen, that the signals were not sufficiently explicit. In the year 1136, a messenger came to inform Earl Paul that war-ships had been seen, but that it was uncertain whether the number was ten or twelve.

The relative situation of the Sound of Papa Stronsay, where the ancient war-ships of the Orcadians were moored, and of the promontory of Elsness in the Island of Sanday, upon which the signal-fires were lighted, is represented in the first sketch given in Plate XI., which was taken from one of the commanding ward-hills of Stronsay. In this bird's eye view, the various localities referred to are indicated by the following letters:

a The Sound of Papa Stronsay;

b The Island of Papa Stronsay;

c Elsness in the Island Sanday, upon which, for the sake of distinction, fires are represented as burning;

d The Island of North Ronaldsay, which appears faintly at a distance;

e Fair Isle, intermediate to Orkney and Shetland, which, according to the Orkneyinga Saga, was a beacon station.

Such is the interesting vitrified site of Elsness, which I was as gratified in exploring, as upon finding that the rescue of its cairns from the unfortunate state of dilapidation to which too many Orcadian antiquities have been subject, has been due to the very intelligent proprietor, John Traill Urquhart, Esq. of Elsness, who, desirous of ascertaining their origin, and fully aware of their importance to the archæologist, had given strict orders for their preservation. Previous to these injunctions, Mr Urquhart informed me, a number of these cairns, during the process of ploughing an adjacent corn field, had been rooted up and levelled.

With these particulars of the actual appearances presented at Elsness I shall for the present content myself. Yet I am still in doubt on one subordinate question,—whether a telegraphic signal of the number of hostile vessels approaching, indicated by a corresponding number of cairns being lighted up, was communicated by this promontory from independent observations, or from signals transmitted from North Ronaldsay,—in which latter case we ought to expect as many vitrified cairns to be

found here as at Elsness. I much regret, on account of the inconstancy of the weather, making a very hasty visit to this more northerly island. I was certainly shown by the well-informed factor of this place, Mr Scarth, many cairns, the stones of which were discoloured by fire, yet there was none in which absolute vitrification was manifest. But I trust that on some future occasion, when I shall be enabled to spend more time in this island, I shall be enabled to satisfy myself upon this question. In the mean time, I can only add, that it is highly probable that Elsness often derived its information of the exact number of approaching war-ships from independent observation, as the high lands of Sanday afford nearly as good a look-out station as North Ronaldsay.

After this particular examination, I visited several of the more common *wart* or *ward* hills of Orkney, but observed the beacon cairns upon them to show little more than discoloration from fire, with the exception of one ward hill only,—namely, that of Sanday, which is situated about two miles north of Elsness. Three of the cairns on this height were considerably vitrified. I may also add, that since I quitted the shores of Orkney, I have received from Mr Traill of Woodwick, vitrified specimens, which were collected from a hill in the Island of Rousay. But I have yet to learn whether or not they were derived from a regular vitrified cairn.

The circumstance of vitrification being chiefly observable on the beacon stations which connect themselves with the mooring of an armed fleet, while a similar manifestation in the ward hills of other islands of Orkney appears scarce, is of no little interest, and strengthens the conjecture, which is not altogether uncountenanced by history, that, upon the numberless occasions of invasion from Norway, it was much less frequently found necessary to alarm the country at large, than to confine the signal to the fleet which was in readiness; and that ward hills were only fired when an enemy was likely to make good its landing, or when it became necessary from any other circumstances to summon the whole of the islands to take up arms.

Nor is it of less moment to keep another incident in view:—that while Elsness from its peculiar locality was in every way adapted, by means of beacon-fires, to communicate with the fleet of Papa Stronsay, the comparative lowness of the promontory prevented its signals from being observed by an expedition advancing from the north; —which fact, by the way, may explain many circumstances connected with the vitrified forts of Scotland.

After this inquiry into the origin of the vitrified cairns of Orkney, and into the appearances which they present, the great conclusion which may be derived from them is,—That as the vitrified sites of Orkney are not characterised, as in Scotland (for I do not rank Orkney as a part of Scotland proper) by the presence of stone ramparts, but simply by small cairns upon which the fuel for

beacon-fires had been placed, they incontestably show, that a beacon station was not of necessity a place of strength or defence.

But besides this conclusion, various other views are suggested, though, in our present state of knowledge, they are less to be regarded as legitimate inferences than as rational speculations. These relate to the vitrified sites of Scotland proper.

The first of these speculations is, that such of the ancient *Duns* or Strengths of Scotland proper, in which vitrification is found to be an occasional occurrence, belong to the oldest fortified sites in the country, and are referrible to some of its earliest inhabitants, probably to the Picts, who are supposed to be of German or Scandinavian origin.

The second is, that these ancient Duns, not originally vitrified, indicate, by their construction and extent, that they were used by a people who had already passed from the hunting to the pastoral state; as they evidently comprehend in their design the protection of cattle with that of human defence.

The third is, that from the tenth to the fourteenth century, a considerable part of Scotland was overrun by the Scandinavians, under the various names of Northmen and Danes, who reciprocally became themselves liable to invasion from other piratical tribes of the same northern origin as themselves, and were therefore induced to institute systems of beacon-fires, in imitation of those with which they had been familiar in Norway.

The fourth speculation is, that as in most instances the ancient fortresses or Duns of the oldest historical period of Scotland were continued to be used as the gathering-places of clans or tribes, the same were most conveniently selected as the sites of beacon-fires; the ramparts of loose stones, which characterize such fortified sites, serving the additional purpose of cairns, on which the fuel was placed.

But while I state these my *present* views (for it is possible I may yet make some little modification in them), I would not renounce the idea, that other public occasions, as, for instance, the annual lighting up of the fire of the Belting, might have assisted, though in a subordinate degree, towards producing the vitrified effects, which continue to be the astonishment of all who are conversant with their extent.

In the next portion of this investigation I shall attempt an illustration of these views.

Historical Sketch of the Pictish Forts of Scotland, in connection with the circumstances which may be supposed to have given rise to their vitrification.

There can be no doubt that the earliest tribes who peopled Europe were of a Celtic origin, the natural character of whom was indicated in the darkness of their hair, in their comparative low stature, and in their language, which was allied to the present Gaelic. This race was succeeded by one of a Teutonic or Gothic origin, who, in issuing from the vicinity of the Euxine and the Danube, succeeded in establishing themselves in Western Europe,—speaking also a language very different to that of the Celts, such as is perpetuated at the present day in the Lowland Scotch, the Belgic, the German, the Norwegian, Swedish, and several other dialects.

To this last-named stock, namely, that which is Teutonic or Gothic, many able antiquaries have referred the ancient Caledonians and Picts, who, according to certain Roman writers, were the same people. Tacitus considers the Caledonians, from their red hair and other circumstances, to be of Teutonic origin; while the ancient British Triads affirm that the Picts, or *Fichti*, came into Alban over the sea of the Llychlyn, that is, according to Llhuyd, from the present site of Denmark.

These are striking evidences, independently of a crowd of collateral circumstances, which induce me to suspect, that the Picts who, in the occupation of a portion of the North of Scotland, succeeded to a people of Celtic origin, were of a Teutonic or Gothic race.

I am much inclined to think, for various reasons, that, in the first place, the Picts landed in Orkney, which, along with Shetland, they colonized; that emigrations from these islands were very gradually extended southward; that Caithness was thinly occupied by them, and Sutherland much less,—very few patches in this last-named desolate country offering for them an invitation of settlement; and that it was only when the Picts reached more southerly regions that the displacement followed of the aboriginal Celtic settlers, who sought a refuge among inaccessible mountains. The Picts then became the formidable people who even struck terror among the Roman armies.

When the Picts or ancient Caledonians began to occupy the more cultivated plains which are found in the vicinity of the Murray Frith or on the east of Scotland north of the Tay, they appear to have passed from the hunting into the pastoral state, which is a circumstance most important to keep in view, as it has given a peculiar character, that we shall soon describe, to all their places of defence.

Their camps are recognised under the name of *Duns*,—an appellation borrowed from the Celtic language;—the Picts having for convenience adopted the Celtic phraseology whenever it was applied to the distinction of topographical objects.

The earliest of these forts or Duns are easily described. None of them exhibit in their structure any regular masonry. Unhewn fragments of stones, and water-worn boulders sometimes mingled with smaller gravel, appear in a quantity almost exceeding belief, following the contour of the summit of a mountain;—and in cases where, owing to the exposed nature of the ground, a stronger defence was demanded, a double or even treble rampart of the same rude materials was added.

I have reason however to suspect, that when the Picts during their long campaigns began to be accustomed to the Roman mode of warfare, these Duns underwent some degree of modification. It must be recollected, for instance, that the Romans, in the formation of their fortified stations, were in the habit of marking out a quadrangular spot of ground, in order that the regular movements of a camp might be governed by it; and, accordingly, in many Pictish Duns we see this quadrangular fortification so well imitated, that if it were not for other circumstances, we should be inclined to suspect that the plan of it had been personally dictated by some Roman engineer. This is evident in the camp of Dundee Law, as well as in many other forts which might be cited.

Again,—while less civilized nations, in the selection of their camps, disregarded the proximity of springs or collections of water, conceiving that a high hill defended with a steep precipice was an object of infinitely greater consequence to them than the contiguity of water, which, to the exceeding inconvenience of an army when large, they were often constrained to transport from a considerable distance, the Romans would take especial care to have always at hand a supply of water for the soldiers, and, when it was necessary to sink a well adjoining the station, these experienced artificers would defend it with an outer vallum. Now it is remarkable that in process of time this practice became imitated by the Picts, who adopted it in such fortified sites as, there is reason to suppose, were the latest in use;—as an example of which I might mention Barry Hill in Perthshire. And in other, though rarer instances, they would even more accurately imitate the works of accomplished engineers, by rejecting for the site of their camps high hills of inconvenient ascent, where water was scarce, preferring, after the manner of the Romans, less elevated spots, so that they were only surrounded, or nearly so, by water, either from the tortuous course of some river, or from the confluence of two or more opposite streams.

And even in another respect the Roman artificers appear to have been imitated by the people, among whom they with difficulty had maintained their ground. The Romans had been accustomed to place camps very near regular roads, that, on an emergency, the march of the soldiers might not be impeded; which custom the Picts in time adopted, though not, as I suspect, until after the departure of the Romans from Britain, when they were called upon to imitate the Roman mode of warfare against newer invading tribes, still less advanced in civilization than themselves.

Accordingly many Pictish forts appear near to ancient roads, one example of which, among others, is afforded in the fort near Fettercairn, named Finella's Castle.

This approach to the Roman form of camps is perhaps one of the most remarkable circumstances in the character of the Duns of Scotland, which can have no other origin than a familiarity with the works of Roman artificers;—the chief difference observable consisting in the coarseness of the materials which were employed in Pictish works, the Romans preferring mounds of earth to rude accumulations of stones, and in the indifference whether a camp was in an exposed or in a sheltered situation;—a choice that was by no means indifferent to the delicate Romans, accustomed as they were to a more genial climate, who for this reason would more usually select sites which had an aspect to the south.

One reason which dictated to the Picts this imitation it may be worth while to investigate. It was well adapted to the exigencies of a pastoral people, who, when later hostile invaders appeared, were anxious not only to defend themselves, but the cattle upon which they depended for a subsistence. Hence the advantage of a fortified site upon some slight ascent in the middle of a rich fertile plain, as in the instance of Dun-o-Deer in Aberdeenshire. Hence also the forts in which wells, so essential to the use of cattle, were protected; as in the camps of Barry Hill, Top-o-Noth, or Finhaven.

In a considerable number, or, indeed, in the majority of the forts which I have hitherto visited, marks of vitrification are observable; but as I must consider that these appearances were not intended to be conducive to the strength of ramparts, but were for the most part incidental to the lighting up of signal-fires, which in a subsequent period took place, such vitrified sites will be noticed hereafter.

Such is the character of the camps, which, it is now of importance to add, I did not trace farther north than the Frith of Dornoch,—which circumstance creates a *suspicion of a distinct people succeeding to the lands which the Picts are supposed* very early to have quitted. These later settlers were the Scandinavians of Orkney, Shetland, Caithness, and Sutherland, who also occupied the Western Isles of Scotland.

About the 6th century a horde of Scandinavians appeared in Orkney and Shetland, by whom, according to their historians, the Picts were utterly destroyed. But this perhaps is an exaggeration. As they were severally of Gothic origin, speaking nearly the same language, they were probably, according to ancient usage, intermingled;—that is, the conquered became the thralls or slaves of the conquerors.

The Scandinavians who are said to have supplanted the Picts in the North of Scotland were the Vikingr or Sea Kings, whose ravages were for centuries the constant dread of Europe. Issuing from their retreats, every neighbouring coast was despoiled of its wealth, and deluged with blood. From Orkney and Shetland they

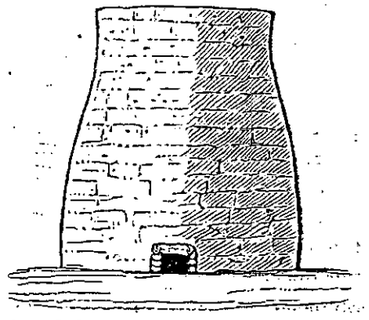
gradually extended their conquests to the coasts of Sutherland and of Caithness, as well as to the Hebrides and the Isle of Man, the bays of which afforded to their piratical barks safe protection.

As these northerly and westerly lines of coast were found of the greatest convenience to the pirates of Scandinavia, in their descents upon the Pictish tribes of Scotland, as well as upon the rich valleys of South Britain, they became, along with the bays of Norway and the Baltic, the great haunts which the Vikingr possessed,

Considering the piratical character of the Scandinavian tribes who occupied the extreme north of Scotland, we can easily explain the absence of large forts, destined, like those of the Picts, for the protection of cattle. The Sea Kings scorned the pastoral life as one that was too effeminate, depending for their subsistence upon the plunder which they obtained from southerly coasts, and, when this failed, upon the arduous toils of the chace.

At length these Sea Kings became, in their turn, liable to hostile visits. The vast plunder which many of them had amassed first excited the cupidity of their own tribes dwelling in the mother country. Accordingly, the pirates of Norway or the Baltic began to make hostile visits to those of the North of Scotland, which consequently met with retaliating descents on the Scandinavian shores.

During these mutual hostilities, defensive fortresses would be demanded on the coasts of the pirates themselves, which may accordingly be traced throughout the whole of the districts of the north and west of Scotland which the Vikingr occupied, namely, from the Frith of Dornoch to Duncansbay Head, as well as in Orkney, Shetland, and the Hebrides. These forts differed widely from those of the Picts, inasmuch as they did not contemplate the defence of cattle. They were intended to protect the plunder which had been acquired among the rich civilized countries of Europe against other marauders, for which purpose nothing more was demanded than a circular tower with hollow concentric walls capable of containing a handful of warriors, with their effects, their wives, and their children. One of the best illustrations of this kind of fortress is the burgh of Mousa in Shetland.



The history of Pictavia during the long-continued descents of the Scandinavians has, by fabulous monkish writers, been rendered sufficiently perplexing; but among the ancient Sagas of the North we find a deep veil of mystery removed. It is certain that numerous conquests of the lands of Pictavia were made by the Scandinavian invaders, and that these pirates were gradually induced to exchange their precarious sub-

sistence for the more certain one secured by the possession of flocks. We are informed by the Sagas, and there is no reason to doubt the testimony, that the Northmen had at one time subdued the half of Scotland. Under one name, Picts and later tribes of Northmen, severally perhaps of the same Gothic origin, became intermingled.

During this confused political state, descents from still newer piratical tribes of the North, to whom no country, even from its consanguinity, was exempt from waste and pillage, still continued. To repel these aggressions the Northmen, who *had previously acquired a footing in Scotland, would naturally be induced to* institute systems of beacon-fires, in imitation of those with which they had been familiar in Norway. As the fortresses, or Duns, therefore, of the oldest historical period were continued to be used as the gathering places of clans or tribes, the same would be most conveniently selected as the sites of beacon-fires;—the ramparts of loose stones, which characterise such vitrified sites, serving the additional purpose of cairns on which the fuel was placed.

This is the theory relative to the origin of the vitrification observable in very ancient Pictish forts, that I would now adopt. We have seen, that in Orkney the vitrified sites of this province are not characterised, as in Scotland proper, by the presence of stone ramparts, but simply by small cairns, upon which the fuel for beacon-fires has been placed. These incontestably show (as I have before remarked) that a beacon station was not of necessity a place of strength or defence. The Northmen of Orkney were not a pastoral people, and they had no camps resembling those of the Picts of Scotland, but simply round towers, which were not calculated for signal stations. Consequently, cairns were erected for the purpose of building upon them piles of fuel for the flaming beacon. Such was the well-known practice also in the Isle of Lewis, which, like Orkney, was inhabited by Scandinavian tribes. But when fresh swarms of Northmen had transplanted themselves to the country of the Picts, with whom they in time became intermingled, and through whose example they were induced to adopt pastoral habits, the beacon would, under such different circumstances, more conveniently blaze upon the Pictish Dun, which from old time had been the gathering place of some clan or tribe.

The view thus advanced is countenanced by every circumstance relative to vitrification which I have yet had an opportunity of observing, and I believe that by this time I have examined far more than two thirds of the known vitrified forts of Scotland. Everywhere, as we should be entitled to expect, conformably to the adventitious use which was made of a fort as the occasional site of beacon-fires, vitrification appears an incidental process. Thus, as I have remarked in my former Essay, wherever the stones which compose any limited portion of a rampart have received the full force of a fire directed to them, a nearly complete fusion may be detected; while in other parts, even of the same rampart, we may trace the fused

matter running among the interstices of the stones in diminutive streams. It may in short be added, that, in almost every instance, vitrification appears in patches, the cementing process not being a continuous, but a very limited or partial effect.

But, as I have before observed, while I state these my present speculations, for it is possible I may yet make some little modification in them, I would not renounce the idea that other public occasions, as, for instance, the annual lighting up of the fire in the Belting, might have assisted, though in a subordinate degree, towards producing the vitrified effects which have been the subject of the present inquiry.

Having been thus induced by my discoveries in Orkney to attempt the outline of a very general history of the Pictish forts in Scotland, in connection with the circumstances which may be supposed to have given rise to their vitrification, I shall now enter upon a descriptive account of each distinct vitrified site which I have visited, commencing with

The Vitrified Site of the Top-o-Noth, in Aberdeenshire.

As this is perhaps one of the best and most perfect specimens of a vitrified site which is to be found in Scotland, I have wished that a description of it should precede every other. It is to be found on the fortified summit of an insulated ridge of hill, composed of gneiss, near the village of Rhynie in Aberdeenshire, stretching from north-west by west to south-east by east. The height of this hill I did not take. It has been estimated by Dr Macculloch at 1800 feet above the level of the sea, which may perhaps be near the truth. I did not ascertain its height above the level of the adjoining plain at Rhynie, which must be considerable, perhaps not less than 1200 feet. The form of this hill is expressed in the second sketch of Plate XI.

The summit of the hill must have exhibited in its original state a small plain, nearly level, the area of which was about one hundred and twenty yards from north-east to south-west, by about fifty from north-west to south-east. Upon this plain a fort has been constructed which occupies the whole of its space. The area which has been fortified cannot be better described than by comparing the model of it to a filled-up or extinct volcanic crater. An incredible accumulation of loose stones has been made to rise to the greatest height around its circumference, and to gradually thin off towards the centre of the inclosed site. An exact representation of its appearance is given in the third sketch of Plate XI.

The site which is fortified and inclosed shows a faint approach to the form of a parallelogram, rounded at its angles. Its dimensions have been very differently rated. Dr Anderson states that it is 60 yards long by 25 wide, while Dr Macculloch esti-

mates it at 90 yards long by 32 wide. This confusion may be possibly explained, by each observer having been indifferent to the circumstance that the accumulation of stones which formed the circumference of the area gradually thinned off towards the centre, and by each commencing his measurement from different points of the gradually inclined wall. My own observation has been already stated. The rampart has been raised upon an area measuring 120 by 50 yards. The height of the stony rampart varies from nine to twelve feet. Within the area was sunk a well, which, from the accidents it has frequently caused to the sheep which graze upon the hill, is now in part filled up. Its original subsistence must have been important to the garrison, as well as to the cattle, which this fort was alike designed to protect. The well is represented in the third sketch of Plate XI.

The entrance to the fort is on the south-east side of it, beneath which the hill is the least steep, and is therefore protected by one or more trenches or covered ways, which some observers; indeed, conceive they have traced round the whole compass of the mountain. It has also been supposed that, along the gradually declining ridge observable in a south-easterly direction, traces of a causeway may be detected extending considerably down the hill, which has been described as consisting of laid stones joined with great care and strength, and resembling a Roman road. But, as far as my own researches extend, I saw little more than the angles or points of a natural ridge of rock, irregularly protruding through the green sward.

On the south-west side of the hill a considerable steepness occurs, which prevails as far even as the village of Rhynie. But this steepness is exceeded on the north-west side, where very declining banks prevail. From this part of the summit a very extensive tract of country is commanded. Opposite to the north-east side, a portion of the hill in the form of a high peak protrudes, between which there is a deep depression, bounded by steep banks.

Such is the natural and artificial character of the fortress of Top-o-Noth. Regarding the origin of this fortress, there can be little hesitation in considering it as having been formed by the Picts, or ancient Caledonians, during their pastoral state, with the view of protecting themselves and their cattle from the sudden descents of hostile invaders. To this situation they would not only be invited by the insulated character of the eminence, and its steep banks, but likewise by the luxuriant spring of water, so serviceable to the use of a garrison, which still gushes forth from the side of the hill. This supply of water was further aided by the sinking of a deep well, the remains of which have been described as observable on the summit of the mountain.

The vitrification which is to be detected in patches among the ramparts of loose stones I consider as referrible to the period when the Picts became intermingled with newer settlers from Scandinavia and her colonies, by whom they were instructed, after the example of Norway, to open out, as signals of alarm, a communication of watch-fires from one fortified summit to another, wherever they were exposed to the renewed irruptions of their persevering foemen from the north.

The watch-fires which had been lighted up on the fortified area of the Top-o-Noth must have been chiefly kindled upon the higher portion of the ramparts, where patches of vitrification are to be observed in various places. In the middle of the fortified area I observed comparatively few marks of vitrification. On the north-east side, opposite to which a high peak obtrudes itself, three or four vitrified patches only are observable. But on the north-west side, where an extensive tract of country is overlooked, the vitrification is more considerable. And on the south-west side, which commands the extensive vale in which the village of Rhynie is situated, there is scarcely any portion of the rampart to be seen in which greater or less marks of vitrification are not to be detected.

Numerous, however, as are the patches of vitrification in this fort, considerable intervals are to be detected in which there are no signs of fusion whatever. The stones acted upon by fire consist, as I have before observed, of gneiss. This substance contains much felspar, to which circumstance may be ascribed the facility with which it has been fused.

These are all the remarks which are suggested by the vitrified site of the Top-o-Noth. It is foreign to this description to add, that on the westerly flank of the hill may be perceived a lofty upright stone, connected with which is a monstrous traditional story of its having been placed there by a giant, the print of whose heel in it is still visible. I did not visit the stone, which is affirmed to be seven or eight feet high.

In a future volume I shall continue these researches.[1]

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[1] Since drawing up this communication, I have been favoured by the Rev. James Veitch with a notice of a vitrified site near Jedburgh, discovered by his father, which is the more interesting, as another unexpected one in this part of Scotland had been previously noticed by Dr Home of Cowdenknows, who traced it upon the ancient and well-known hill of that name, situated upon his estate near Melrose. As some little time may elapse before I shall be able to visit the vicinity of Jedburgh, I shall in the mean time beg to transcribe the obliging letter which I have received.

"*Edinburgh, 26th June* 1832.

"DEAR SIR,—I have just received from my father the following particulars respecting the vitrified matter found at Howden Moor. The place is about one mile to the south-east of Jedburgh, and about 450 feet above the level of the sea. The spot had never before been cultivated; and the matter was found by workmen who were engaged in levelling for the plough. The quantity found amounted to about four or five bushels, and this was contained in the space of six or eight feet, at various depths to four feet from the surface, and below this was white sand. There were many stones, but no appearance of building, or of the ac-