

IV.

NOTES ON THE SHELL HEAPS NEAR INVERAVON, LINLITHGOW-SHIRE. BY DAVID GRIEVE, Esq., F.S.A. SCOT.

It has been long known that there existed a great accumulation of shells, mostly of oysters, in the above locality. The bank or heap has been broken into, and exposed on more than one occasion, and noticed as a remarkable circumstance in the history of the district. Pennant refers to it in his "Tour," only he places it near Camelon, which is evidently a mistake. In the Statistical Account of the parish of Bo'ness, in which Inveravon is situated, the shells are thus referred to:—"A remarkable bed of shells has been long known to exist in the bank near Inveravon. By recent excavations in various parts of the bank, between Inveravon and Kinneil House, the bed appears to be continuous between these two places. It consists chiefly of oyster shells. A species of mussel shell is seen in some places, and one part of the mass is petrified." In a footnote to Stewart's "Caledonia Romana," edition 1851, page 181, the learned editor of that work also says, "In the vicinity of Inveravon, and on a terrace several miles from the sea, a cross road has been cut through a bed of fossil oysters. These are seen on both sides of this inland road in fine preservation. This curious bed is several feet thick, and the oysters were generally closed."

During the month of July last this singular heap of shells was again uncovered, and a fine section of it exposed to view, in consequence of the wall or dyke of one side of the cross road being taken down, in order to be rebuilt. While this was being done, the section was visited and inspected by many persons, among them, I believe, several of the members of this Society, including Mr Anderson, keeper of the Museum. Having made inquiry, I do not find that there is any likelihood of the subject being brought under the notice of the Society by any one else, and I mean, therefore, as being one of those who visited Inveravon, to give a short notice of my observations, as well as also my speculations on the subject.

The section of the bank laid bare by the removal of the dyke extended to about ninety feet—the highest part of the heap being between five

and six feet, tapering to a point at the lowest part of the bank or terrace. The cross road referred to at this part runs about due north and south, and the lengthways direction of the heap (or mound as it is sometimes called) east and west, so that the road completely intersects it. I traced the heap on the west side of the road for seventy yards, and on the east side for ninety yards. As I have already said, the section exposed north and south extends about thirty yards, but how much further north I was unable to ascertain. If, therefore, the statement made in the Statistical Account is to be believed (and there does not seem any reason for doubt), that the heap extends continuously eastward to Kinneil House, which is in this last direction, it would give an aggregate of such an enormous quantity of shells as could hardly be estimated.

The shells forming the section exposed were *not* in their natural bed, but were mixed promiscuously in every position, and none of them were fossil (in the ordinary acceptation of that word), nor were they closed in any instance so far as I observed.

Some other species of shells I found mingled with the oysters, such as varieties of the *Mytilus edulis* (of these a very considerable quantity), *Cardium edule*, *Littorina littorea*, *Solen siliqua*, a portion of *Tapes pullastra*, and a portion of the claw of a small species of crab. It will be observed that these are all edible molluscs.

The oyster shells were generally remarkable for their largeness of size, resembling more the Calais oyster than the Pandore or native oyster of our Forthian coasts of the present day. Many of the mussels were also notable for their size, but more so for the thickness of their nacre and pearly structure.

I have said that these shells do *not* rest on their natural bed, and it may be proper here to say a few words on this point. The late Mr Charles Maclaren, in his work on the "Geology of Fife and the Lothians,"¹ refers to this heap of shells in order to establish what he considered a fact, that the bed of the Forth had risen sixty feet, because he found this oyster scalp (as he considered the heap to be) about forty feet above the present sea level. He argued thus, because the shells "lay conformably, being regularly disposed on their sides resting on one another,"—ergo, it is an oyster scalp *in situ* raised high and dry. Any one, however, who knows

¹ Ed. 1866, p. 317.

about oysters, knows that the oyster lies flat, except when it is adherent to rocks or other substances, and the fact of these being on their sides (as stated) proves them to be disconformable, and therefore *not* in their natural bed. In the section lately exposed, however, the shells were not on their sides as a rule, but were huddled together, as we have already said, promiscuously and in every possible position, the valves of the shells being all single, and not *vis-a-vis* on their hinge, as would have been the case had this been their natural bed.

In a paper read before the Royal Physical Society by the late Alexander Bryson, Esq.,¹ on the question as to the rise of the shores of the Firth of Forth (who took an opposite view to that of Mr Maclaren), he very clearly shows that the oysters at Inveravon were not *in situ*. Mr Bryson says—"Let any one who hears me go to the spot, and he will find no trace of a marine bed below his (Mr Maclaren's) subaërial oyster scalp;" and again, "Had this bed been a pelagic one, as stated erroneously by Mr Maclaren, would we not have expected to find, if it had been rising so rapidly in the world, that it would have left some traces below of its origin? No such trace can be found, but instead a fine deep bed of humus." Mr Bryson then goes on to account for the deposition of the shells at Inveravon by the agency of a high tidal wave. This supposition is, for various reasons, to my mind quite untenable. It is very clear that Mr Bryson had formed a most inadequate and limited view of this immense and far extended mound or heap. He says the oyster shells may be obtained in *cartloads*. If he had said tens of thousands of cartloads he would have been nearer the mark.

He mentions instances of ships, whales, &c, being carried by the waves a long way and deposited high and dry. The action of a high tide in regard to such single objects is quite conceivable, but that the tide should select and arrange such an enormous mass of shells homogeneously (we use the word homogeneously because there is no sand, shingle, rolled stones, or other debris of a sea bottom intermixed) is quite inconceivable, and the idea cannot for a moment be entertained. The ocean never makes a selection when it displays its mighty power in the storm flood—everything is dashed into heterogeneous mixture or into fragments, with but few exceptions. This, then, is not a natural oyster bed, nor have the waves

¹ Proceedings of the Royal Physical Society, vol. iii. p. 278.

had anything to do with its present position—the shells have clearly been placed where they are by human agency. All the evidence points this way.

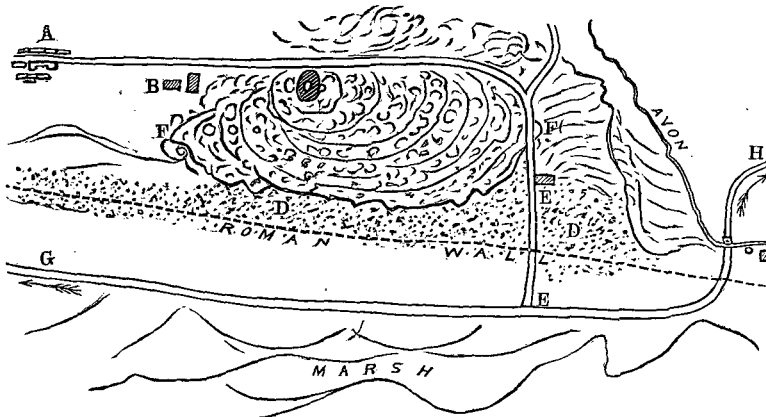
Intermixed with the shells I found some few streaks of carbonaceous matter, but the quantity was not very considerable. This was chiefly near the bottom, and towards the lower or thin end of the section. Further than this there were no traces of fire, neither did there appear any indications of a hearth or hearth stones. Mr Anderson, indeed, mentioned to me that he observed in the trench dug for the foundation of the dyke, a sort of causeway, the interstices of which were filled with what appeared to be coal culm. This causeway, I regret to say, I did not see, for it had been covered over previous to my first visit; but Mr Deane, the intelligent farmer on whose land these heaps partly repose, informed me that he had seen it, as also had Mr Dawson of Linlithgow and other gentlemen.

He described to me its position, size, appearance, disposition of the stones, and other matters, from which I had no difficulty in concluding, as Mr Anderson had done, that it had formed part of an old Roman road, most likely of the *via* which in all cases ran parallel with, close to, and within the wall. In this case it seems to have done so, if the supposed line of direction of the wall, as generally given, be correct, which was not far from being at this place about east and west—the direction also lengthways, be it remembered, of the oyster heap. The causeway was covered by only a thin layer of shells near the exhausted edge of the heap. The Inveravon oyster heap would thus appear to have extended in line inside the Roman wall. (See sketch on opposite page.)

It is an interesting speculation as to when, how, in what manner, and for what purpose, this vast accumulation of shells had been brought together. I do not intend to express any dogmatic or even very decided opinion on the subject, but simply to offer some suggestions, for it is one of those cases in regard to which nothing is absolutely known or determinately indicated, and therefore it is only permitted to speculate as to probabilities, reasoning from analogous circumstances, or what is obvious from appearances presented. I may premise, that when this oyster heap was lately reopened, I did not see sufficient ground for supposing it to be a kitchen midden, as many people considered it to be, or at least such a one as those commonly found in this country. I am not aware that any bones, pottery,

or other household relics, have been found amongst the shells, at least I could obtain no trace of such, and I therefore objected, perhaps somewhat too hastily, against this designation being applied to the heap, because I now think that, in a certain sense, it may not be altogether inapplicable.

In Denmark, in some islands in the Baltic, and in other parts of Scandinavia, there exist enormous beds or masses of shells of edible molluscs, and which bear indubitable marks of being the refuse heaps of consumed food. Sir Charles Lyell also mentions similar vast accumulations in Georgia and other localities in America, where large mounds of shells had been left by aboriginal tribes of American Indians as the relics of their feasts.



Eye-sketch of Shell-heap, showing its position in relation to the Roman Wall, &c.

- A, Inveravon; B, Farm-steading; C, Castle of Inveravon; D D, Shell-heap;
 E E, Wall removed, showing Section of Shell-heap; F F, Wooded Hill;
 G H, Road, Boness to Polmont.

In this light, may our mound not be the relics of successive generations of piscivorous people inhabiting this part of the coast? The aboriginal Caledonians were notoriously partial to molluscous food, and the Romans were perfect gourmards in regard to oysters.

The traditions of the people at Inveravon as to these shell-heaps is, that they are the shells of the fish consumed in olden times at the Castle of

Inveravon. A remnant of this castle on an adjoining height overhangs the shell-heaps in shape of a tower, and is erroneously called a Roman tower by Sir Robert Sibbald. There is historical evidence, however, that this castle was, to use a familiar Scottish phrase, 'dung doon' by James the II. of Scotland A.D. 1455. It was built in all likelihood on the site of a Roman fort,¹ for this is just the place where such a fort would be in connection with the last one on the wall to the east at Carriden. A large Roman population would be sure to maintain itself close by; and as we have shown that the heap is within the lines of circumvallation, the Romans were likely either to be the original depositors of the heap, or would, if it had been commenced by the aboriginal natives, add largely to the deposit. In the middle ages, the Lords of Inveravon, and also the neighbouring lairds, such as he of Kinniel, with their dependants, would have their share in increasing the accumulation. In this way, in a certain sense, as I have said, this great heap may be called a kitchen midden.—

It is to be considered, however, that only very little of this vast heap has been explored, and time, which is said to be the discoverer of all things, may yet show that it contains such objects as are commonly found in other Scottish middens, by which its relative antiquity may be determined. But meantime, as already said, we have no data by which to fix the period when these shells were deposited, but I think we may reasonably suppose that it may not have been much earlier (if so early) as the time of the Roman occupation of this part of the country. If we fix it so, therefore, provisionally, may not this heap have been a magazine of material for the purpose of being burnt into lime? This would still leave room to suppose that the contents of the shells were eaten for food. On examination of old Roman bridges or other works, it will be found that the cement was often—I perhaps should say as a rule always—composed of calcined shells. Lime was not used in the construction of the wall of Antoninus, but as we have said, there were various forts² and castellæ or watch-towers connected therewith possibly built with lime, not to mention the private dwellings of the Roman colonisers. But it is not necessary to fix a date so early in order to suppose that this heap was an unburnt lime depôt. Shell lime has

¹ These forts were placed along the wall at a distance of about two miles from each other.

² There were nineteen on the line of wall, extending over thirty-six miles.

been used continuously in this country for many centuries. Examples will be found in the ancient ecclesiastical buildings of Iona—in the ruins of the border keeps of the middle ages—in our older abbeys and churches; and more than this, shell lime is used in other countries, and even in some of the remoter parts of our own country, at the present day.

To show how ancient and universal the practice of shell-burning for lime prevailed, I shall take the liberty to make an extract of a paper by Mr Earl, read before the Ethnological Society 4th March 1862, relative to the shell mounds of the Malay peninsula :— “ These are situated in the province of Wellesley, near the Mudah river. They are about five or six miles from the sea. The mounds, which are entirely composed of cockle shells, are about eighteen or twenty feet in height, and recently have been largely employed by the Chinese immigrants as a source of lime. The antiquity of the mounds must be very great, as shown by the fact that the shells were partly cemented together by crystallized carbonate of lime, the result of the very slow action of atmospheric and aqueous influences. One of these mounds contained 20,000 tons of shells. ” These shells were stored up by an almost extinct race of people in very remote times, and there does not seem to be any reason to doubt that the storage was in this case made for the very same purpose to which the shells were being applied by the modern Chinese.

Immense heaps of oyster shells are also found in Corsica, as well as at La Vendee in France, but in these cases the tradition is, that the shells are those of oysters pickled and exported to Rome by the Romans. Knowing as we do what a luxurious people the Romans were, and that they habitually used oysters at their feasts, there is nothing improbable in this story, and if so, they may as well have sent pickled oysters from Inveravon, but the far greater probability certainly is, that the shells in the heap were collected together to make mortar of, after their contents had been eaten on the spot. Another conjecture in the same direction may be hazarded. The land between Inveravon and the shore has been all reclaimed from the sea, and there might have been extensive oyster scalps *in situ* there; it may be therefore, that in clearing the ground for agricultural purposes, as fields are cleared of stones at the present day, a double purpose would thus be served by clearing away the shells and storing them on the heap for mortar.

A remark or two occurs in regard to the mussel shells, which, as I have said, are in considerable quantity, and the nacre or pearly matter in them is very largely developed—several small well-formed pearls having been adherent to some of them, as will be seen from the specimens exhibited. We think it more than likely that these shells had been opened for the purpose of searching for pearls. Suetonius says that the prospect of acquiring pearls was one of the chief inducements of Cæsar to invade Britain; and he even on one occasion dedicated to Venus a breastplate studded with British pearls. Several of the Roman poets celebrate the beauty of the Caledonian pearls—and although it is probable some of these pearls were in ancient as in modern times procured from the freshwater shell the *Anodon*, yet the *Mytilus* would no doubt also contribute a portion—nay the greater portion, because the Romans mostly frequented the coast where the sea mussel was plentiful and more easily obtained.

I submit these views in the meantime, considering, as I have said, that a more full and complete investigation of other portions of this curious and interesting shell-heap may bring to light objects tending either to confirm or confute some of the speculations in these notes, and possibly to settle the questions of its age and origin.
