man's head; but as we go to the north-west, they increase both in number and in size. The nearest granitic rock in that direction is at Cruachan, about sixty miles to the north-west of Airdrie.

In the Till itself, organic remains are so rare, that it has been considered by some geologists as altogether destitute of them. There are, however, perfectly well-authenticated instances of the bones of the fossil elephant being found in it, and upon one occasion I found broken and water-worn fragments of shells irregularly dispersed in it*, amongst which I recognised the massive hinge of the *Cyprina Islandica*, Linn. sp., and the stem of a large species of *Balanus*, apparently the same as that figured by Sir Charles Lyell in his paper on the Changes of Level in Sweden†. Both species abound in the pleistocene beds, but neither of them is found in the immediately adjoining sea. The shells lately discovered in the Till by Mr. Cleg-horn, at Wick and at Thurso, are precisely in the same state as those discovered by me, namely broken and water-worn. I may add, that they have the same arctic character, for amongst them I observe the *Tellina proxima* or *calcareo*, the *Astarte borealis*, Linn. sp.; and the *Astarte Withami* of my catalogue, so named because the shell was sent to me from Bridlington by the late Mr. Witham of Lartington.

We may conclude from the facts now brought before the Society, that the Till, and the stratified beds which lie immediately below and above it, all belong to the same geological period—to that which immediately preceded the present, and which has been named by Prof. Edward Forbes the Glacial epoch.

I may add, that Mr. Russell states that after passing through the shelly bed of brick clay, he came again to the Till; thus proving indisputably what has always been suspected, that there has been more than one deposition of the Till or boulder clay.

Notice of the occurrence of MARINE SHELLS in the TILL. By JOHN CARRICK MOORE, Esq., Sec. G.S. *In a letter to James Smith, Esq., of Jordan Hill, F.G.S.*

"I HAVE two facts to communicate, which have come within my own observation in Wigtownshire, and which will interest you who have paid so much attention to pleistocene geology.

"1st. After diligently hunting the boulder clay, which usually is found to contain only fragments of shell, and that sparingly, I succeeded in finding one perfect valve of *Astarte compressa*, Montag. sp. The spot where I found it is on the west shore of Loch Ryan, about two miles from Stranraer; it was imbedded in the genuine Till or brown sandy unstratified clay, with blocks of transported rocks interspersed through it.

"2nd. Reposing on the Till, patches of a distinct clay containing no gravel or boulders, occasionally occur in Wigtownshire. On one of these is erected the Culhorn Tilework, within half a mile of Stran-

* See my paper in Wern. Memoirs, vol. viii.

† Philosophical Transactions for 1835.

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raer ; at this locality the clay contains *Nucula oblonga*, Brown, which appears to have lived and died on the spot ; as in all the specimens the two valves were united, and appear not to have suffered the least abrasion.

“I send you these facts, as they may be of service to you in speculating upon the origin of these beds.”

20th April, 1850.

3. *On the NEW RED SANDSTONE of the SOUTHERN PORTION of the VALE of the NITH.* By ROBERT HARKNESS, Esq. [*Communicated by the President.*]

[*Abstract.*]

THE sandstone occurring in the southern portion of the Vale of the Nith forms the north-west extremity of the great triassic formation which, commencing south of Appleby in Westmoreland, passes northward, having the mountain limestone for its eastern boundary, until it reaches Dumfriesshire. Its western boundary is also mountain limestone until it comes in contact with the eastern extremity of the West Cumberland coal-field, from whence it turns westward, skirting the edge of this formation, until it reaches the sea near to the entrance of the Solway Firth, under which it passes and again reappears in the southern portion of Dumfriesshire.

The eastern limit of the new red sandstone in Dumfriesshire is the parish of Canobie, where it is seen in the bed of the river Esk at Canobie Bridge. Its northern extremity in this parish is met with a little higher up the river at a place called Knottlyholm, near to which the Canobie coal-field commences. The new red sandstone forms the southern portion of this parish ; from whence it ranges westward, and passing through the greater portion of the parish of Half Morton, is again seen and worked extensively in the adjoining parish of Kirkpatrick Fleming. The upper portion of this parish consists of mountain limestone, which forms the northern boundary of the sandstone, and this limestone extends for a considerable distance in a southwesterly direction, forming the northern extremity of the sandstone in the parishes of Annan and Cummertrees. The sandstone occupies the whole of the former parish except a small portion of its northern part, and in the latter it is confined to the southern end. Besides the parishes already mentioned, of which it constitutes a part, it occupies exclusively the parishes of Gretna and Dornock which lie upon the margin of the Solway Firth. The parish of Ruthwell, west of Cummertrees, and bordering the Firth, is composed principally of mountain limestone, and it is probable that near here the sandstone again passes under the waters of the Solway before it reappears in Caerlaverock, west of Ruthwell ; and here commences that portion of the new red sandstone to which this account more immediately refers.

In Caerlaverock the eastern limit of this sandstone cannot be as-