4th October 1881

Memorandum regarding portions of a Peat Moss with ~~the~~ tree roots recently found under High Water Mark on the Shore adjoining Golspie Links

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My object in preparing this Memorandum is simply to note in our proceedings the fact of the discovery of the Peat Moss, and to suggest some investigation in connection with it which might throw some light on several interesting points which its presence in its present position suggests for consideration.

My attention was first called to it about two months ago by Mr. Alexander Sutherland a Member of the Club, who had observed it while taking a walk along shore. Mr. Sutherland had never seen it before, - and on making enquiries at some of the oldest inhabitants of Golspie, among whom were several fishermen, they all said that they had never before either seen or heard of it.

Indeed when the softness of the material and its consequent liability to be broken up is taken into account it is apparent that it could not for a lengthened period at any time have been exposed to the action of the waves. Its exposure at the present time is no doubt the work of the tides

and currents which are known to be constantly changing the position of the banks of sand shingle and stone along the shore carrying the matery: als westward in the direction of the Little Ferry.

On going myself to examine the Moss I found it to be situated half a mile or there: by to the west of the Village, and to consist of two portions of about equal extent distant two or three hundred yards from each other. The westmost and most interesting portion containing the tree roots is nearly opposite the westmost sea hole of the Golf Course and about fifty paces below high water mark of ordinary tides. Its length I found to be Thirty paces and its breadth Twelve, but possibly it may be found of much larger extent when the surrounding sand has been dug into and removed. On the surface of this portion of the Moss I clearly distinguished the roots of at least 7 (seven) trees. These were spreading in all directions from the centre where the stems had stood. It is not easy to say what may have been the size of the trees but judging from

the roots it must have been considerable.
The appearance of the MOSS with the radiating roots over the surface is very similar to what is to be seen at any exposed part of an ordinary Peat Moss where trees habe grown. I did not find any traces of the roots in the eastern portion of the Moss. Both portions I considered to lie about 6 (Six) feet under high water line of ordinary tides and of course they are only visible at low water.

On again visiting the Moss in company with our President Dr. Joass and our Secretary Mr. Stevenson I made a number of perforations with a Trowel through the body of the Moss, coming on each occasion to Sand. But with a trowel I could only do the work imperfectly and it is not to be assumed that the Moss as a whole is resting on sand, and whether or not it is so is a point which it is of importance should be cleared up ~~as I shall afterwards note~~.

The thickness of the Moss I found to be about one foot. Various portions of the roots of the trees were found with the bark still adhering and in the opinion

of Dr. Joass the character of this bark indicated that the trees had been Birch trees and not Pine Trees. That the trees were not Pine is confirmed by the opinion of a practical Carpenter to whom Mr Sutherland shewed a portion of the wood taken from the Moss. Dr. Joass' opinion that the Roots are of Birch Trees was subsequently confirmed by the finding of a portion of a Birch Catkin in a piece of the Moss which I shall refer to afterwards. The most import-ant discovery we made on the visit to the Moss I am now noticing was a number of marine Shells of different kinds in what at first sight appeared a part of the Moss but on closer inspection was found to be a hardish black Clay. These Shells are bi-valves and belong to species of Molluscs which are known to have existed in late Geological times and still exist inhabiting muddy shallows to which the Sea has access. The shells were found imbedded in clay in an upright position, the position in which the molluscs are found when in life and the conclusion to be drawn is obvious the shells are now in the position they grew,-

X Peat that besides moss it appears to be composed of various vegetable matter such as Flags or Reeds and my friend Mr Herbert Fowler found in a portion of it what from the appearance of ringed stems must have been

I have since visited the Moss on various occasions but without observing any new facts worthy of notice. On one of these occasions I was accompanied by my brother Dr Ramsay H. Traquair. Fellow of the Royal Societies of London and Edinburgh and Keeper of Natural History Department of the Museum of Science and Art Edinburgh whose suggestion as to the probable course of events which brought the Moss and Clay into their present position I shall afterwards refer to.

I have only further to mention in the way of additional facts in regard to the X ~~Moss that my friend Mr Herbert Fowler found~~ [in] ~~a portion of it to be made up of what appeared to be the remains of vegetable~~ matter ~~such as Flags or Reeds and as indicated~~ by ~~ringed stones~~ [stems] horse tails; ~~and along with these he~~ [In this mass of peat he] found the portion of the Birch Catken already alluded to.

Now I do not doubt you all feel it to be a subject of interesting enquiry — how came these large portions of Moss and the Roots, clay and shells to be in their present position. The Moss and Trees could not

have been produced at an elevation I should think of less than Six feet above the sea. And the Shells could only have been produced when the Clay was situated on a level with the Sea. and we now find the whole situated at a level Six feet below the sea at high water.

In any inquiry that may be made on this subject three well-defined eras or points of time are to be taken into view. There is (1st) the period when the ~~Moss and~~ Trees were produced. Then (2nd) the Period when the Shells were produced, and (3rd) the period or point of time when the whole came into their present position. The periods when the Trees were produced and when the Shells were produced are not to be held as having occurred in the order here noted. The order in which they did occur is a point which it is of great importance to settle for if the Shells are found to have been produced before the Trees. there must have been an elevation of the ground and then a depression. - But if the

Trees are found to have been produced first there may have only been one gradual depression with a period of halt when the shells were formed. Which was first produced should not be a matter of much difficulty to settle for with a little excavation it will be easy to see whether the peat is superimposed upon the clay or vice versa.

If it should be found that the Peat with the Tree roots rests upon the clay then the explanation of what he now suggests by my Brother is perhaps the true one. When he saw the shells embedded in the clay he was struck with the similarity of these to specimens of shells in clay from near Cromarty in the collections of the late Hugh Miller now in the Museum of Science and Art under his charge. These specimens are from what are known as the raised beaches occurring in various parts of Scotland and this fact appeared to my Brother to indicate that our clay bed had at one time formed part of these raised beaches, that while it did so it had been overgrown with moss and trees, and that the raised beach having been undermined

by the encroachments of the sea the moss clay and shells &c were seen had fallen from their former elevation to their present position - However if it should ultimately turn out that the clay is lying above the peat, this theory can have no place -

If the present position of the peat and tree roots cannot be accounted for by some such theory as the one just referred to, then their antiquity must be very great indeed and their history would carry us back into geological times - In this view every fact connected with the moss &c has a double significance - 1st as showing what the history was and 2nd as illustrating a geological era -

In any point of view it seems to me to be very desirable that all the information possible regarding this Peat moss should be got: and I would particularly suggest the use of the spade to try if possible to ascertain whether the peat extends beyond what has as now visible, and in particular whether the clay and shells are everywhere above or below the peat -