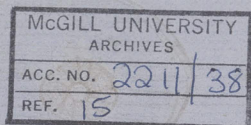


S.M.D.,
May 14

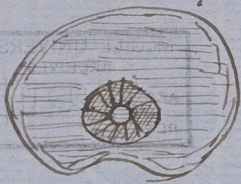
London
May 7. 1871.



Dear Papa.

We have now had
several lectures on Palaeontology.
Etheridge is beginning this year with
Plants, & I fancy will go on to the
brachiopoda, & cephalopoda. Last session
did trilobites & Corals,
He lays out characteristic specimens before
land, & as he reads out the characters of
each genus, passes round the specimens,
& points out to you the special character-
istics. Making at the same time any
remarks on the geographical distribution &
the characters, & names of typical species
you take down, & afterwards tabulate to
show their range in time. On Friday
he showed us some splendid sections of

Stegomaria, showing the woody axis &c
beautifully. Somewhat as below.



Prof Ramsay's course suffers
as usual for want of a
really good text book.

He recommends Jukes's
Geology, but - is out of print, & the
new Edition not quite ready. Most
of the fellows seem to have got Payer's
advanced text book. It is I think
very good, & definite & clear in style.

Lyells would no doubt be the best, but
unfortunately begins wrong end before,
& in consequence is very confusing.

I am at present engaged in the task
of reading it through backwards, &
making notes on it which may afterwards
be read forwards. The Geology lectures
as you know have been over some time,
& the date of the examination is not
yet quite fixed. On going over my
notes I find we have had a good many
glacial periods, or "episodes". One very

probable) in the Silurian of S. Scotland.

One or more in the ^{Old Red Sandstone} ~~Permian~~, One Permian.

One Miocene, besides the recognised Post Pliocene period. Also according to Ramsay probably much of the Cambrian.

The Old Red Sandstone, the Permian, & the New Red Sandstone, were deposited in lakes, or at any rate in portions of the sea shut off like the Caspian at present.

Some of the proofs brought forward are very good, & it seems to be a good way of getting over some difficulties, but on the other hand it is rather difficult to draw any line, & hard to imagine lakes big enough for some of the wide spread deposits.

Another theory is that of the formation of lakes by glacial action. This is especially good for the Swiss lakes, which are scooped out of solid rock, & their bottoms sometimes below the sea level. It must also be hard to account for the little rock basin lakes of Scandinavia, & N. America, unless an

this theory.

May 11.

I have not been able to find out very much about the Boring, There is I believe no good book on the subject. I have read some of Smyth's old lectures, reported in the Mining Journal. 8²

The method usually employed in England in boring for coal, is the old rod-method. Iron rods being used, & as the coal is often at no great depth, not even a steam engine employed. The average contract-price at Newcastle is, 7⁰ 6^d per fathom for the first 5⁰ fathoms. 15⁰ per fath. for the next 5⁰ & so on, increasing by 7⁰ 6^d per fathom, by fives. Iron rods are not considered better than wood, but only used because cheapest.

Messrs Kind, an eminent French firm have carried out many very important borings in France. But mostly I think for artesian wells, where large bores

are required. Their borings, at any rate, all their large ones, have been carried on, on the rod principle.

With the rod boring in France & Belgium several improved free falling cutters are used. Messrs Kinds average rates are.

12 inch bore. Up to 150 metres 75.5 per metre
from 150 to 400 metres 125.0 From
400 to 500 metres £ 8 per metre. Beyond
500 metres £ 12 per metre.

The boring by flat ropes is somewhat new. Much quicker than rods, as the tool may be brought to the surface in a few minutes without any trouble of unscrewing. Also cheap. In case of accident to the rope however the difficulties are much more serious, & in difficult ground some trouble in keeping the hole perpendicular to be expected. Smyth seems to think well of this method where the ground is not difficult, & even if an accident is experienced in one hole, another can often be put down, & both not cost more than

our board of road.

Messrs Mather & Platt

Salford Iron Works,

Manchester.

Are the flat-rope people, I have heard very
successfully for Salt, at Middlesborough.
They hold several patents applying to boring
& have sent several models to this
Museum. I should think they would be
probably the best-people to apply to.

Would it not be cheaper however to
get some American (oil well) firm to
take it up?

I have just seen your paper in the
Geological Journal. The cuts you
wanted seem to have been introduced.

Believe me your affectionate

Son

George M. Dawson