

I am sorry I have not an opportunity of telling you in conversation
much more - Be so good as to write to Mr Duncan & tell him
the nature & specimens were most useful - Hunt for fossils of reptiles
in the rippled coal sandstone of Horton Bluff - (with 5 claws. you had better
before you a grand field of discovery in the lower & upper Coal. Helen -
My dear Sir
May 2^d / 42
London
Chas. Lyell

although I have not time to write to you as
fully as I could wish I will not allow another post
to leave without thanking you for your East River
specimens all of which have arrived safely, and
very interesting they were, also Mr. Duncan's Brook-
field shells, a locality which I would recommend you
and him more than any other to visit for the sake of fossils -
But before I go farther I wish to tell you in a
few words as I can what results I have obtained
from a comparison of all my sections of Windsor,
the Joggins, & those I saw with you. You probably
remember how much the last mentioned or Mimdie
section, had induced me to believe the gypsiferous
limestones were below the great or productive coal-
measures - Dr. Gesner thought otherwise, & Mr. Brown
supposed the gypsum near Mimdie & Amherst
might be unconformable. I begged Mr. Brown
to reconsider this when he returned to Sydney, and
he now agrees that the gypsum there may be under

The so-called *Petropora flustracea* is a *Poreostella* of *Levinsdale* most nearly allied to
the *membranacea* of our *Mount St. Vincent*

Letter

Lyell

May 143

the Coal. If the section were perfect on the E. River
as perhaps you may find it next summer, I expect
you will discover the Schubencadic rocks below
the E. River ones, or if anywhere they will be there
I have been showing Mr. Logan my reasons for
believing Windsor, which is same as Schubencadic,
to be lower Carboniferous. It is true that I found
in one section & Mr. Logan in another near Windsor
a small bed of impure coal nearer the older rocks
than the *Productus* & *Terebratula* limestone of Windsor,
but then the same limestone also occurs in Horton
Shuff where ^{intercalated between beds containing} Mr. Logan found it ~~with~~ coal-plants, just
as we found coal-plants on the Schubencadic. The
Lepidodendron of 5 mile Creek ^{which is same species as Horton & Schneid's Mill, S. of Windsor} is a good fact. As to
the Windsor & Debert *R. fopils*, I should begin by telling
you that in spite of what has been said of their being
like species known in the Magnesian limestone above
the Coal in England & Russia, they are associated with
genuine Mountain limestone *fopils*, as at Brookfield
with *Productus Martini* & *P. Scoticus*, & with the genera

Orthoceras & Nautilus, and at Windsor with Cyrtoceras, (a
crooked Orthoceras) also at Canso with Comularia, all
these genera being older than Magnesian limestone -
Then the coral or Pectopora of the Schubenacadie is
not identical with *P. flustracea* of our Magⁿ limestone
as was pretended, but seems the same as one of your
E. River casts of a similar coral. Then I cannot dis-
tinguish your E. River encrinurus from one of the Schu-
benacadie. Then I have *Productus Martini*
& *P. Scoticus* from E. River in beds acknowledged by
Logan as well as us to be below the Pictou coal.
I ought to have mentioned that in one superb *P.* specimen
there was a trilobite! or genus intermediate between
Trilobite & *Limulus*, also characterizing our English coal
and would ill agree with newer beds. They ^(biologists) paleon-
mised Logan, I am persuaded by telling him the fossils
were of a character newer than Coal. They are, ^{in truth} genuine
Carboniferous. The vast thickness of beds without gypsum
or marie limestone between the base of the Minnie
Coal & the top, strikes me as important, & agrees with the

section from the Albion Mines to Picton & P. Edward's Isl. It shows that gypsum in mass, with the marine limestones may be met with in the descending but not in the ascending series - I will now draw up a rough draft of my notion of superposition -

1. Unconformable red sandst. on Salma river seen by us }
 Turo soft red sandstone? } no fossil, age unknown

2. Sandstone of Prince Edw. island }
 Sandstone, grit & shale 5000 feet thick }
 & upwards above workable coal }
 S. of S. Joggins - no gypsum, no coal }
 Coniferous wood }
 Coal plants }

3. a. Productive coal measure, with numerous plants }
 upright trees & calamity - Picton, South }
 Joggins - Sydney - conglomerate species }
 also }
 Sigillaria (all the genera)
 Lepidod. }
 Calamity }
 Ferns }
 Stenopteris }
 Sphenophyllum }
 Coniferous wood }
 Stigmaria }
 Athrophyllum }
 most of the species common to Eng. & U.S.

b. Cypriferous shales S. Joggins & Albion }
 mines - }
 2 or 3 spec. of }
 cyprin & other }
 L 2 modiolae }
 37 pashwater }

4. Sandstone & shales with coal plants & }
 beds of Limestone - E. River Picton }
 Encrinurus }
 Retepora }
 Producta scotica }
 P. - martini }
 Terebrat. of Deibel R }
 species com }
 mon to the }
 Windsor & }
 Brookfield }
 beds of }
 Schubencalen }

Bivalve }
 univalve minute }
 Plesiosia octostria }
 Arxius }
 Terebrat. }
 other }
 Producta }
 not com }
 mon of }
 yet to }
 the Windsor }
 group }

5. Gypiferous Limest. of Windsor, Horton, Schubencalen }
 Brookfield, Lauro, Cape Baeta, Gay R. de }
 associated coal shales & sandst. Horton, Schu }
 benacali }
 35 }
 32 }
 30 }
 25 }
 20 }
 15 }
 10 }
 5 }
 16 }
 15 }
 14 }
 13 }
 12 }
 11 }
 10 }
 9 }
 8 }
 7 }
 6 }
 5 }
 4 }
 3 }
 2 }
 1 }

Mr. B. Mactan from one of the 7 & 8 thin gypiferous
 & shaly levels not all but some of red & yellowish
 (Mactan, Joggins)

first carrying
 can, white
 (!!!)

35 }
 32 }
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 1 }

Orthoceras 2 spec.
 Nautilus
 Cyrtoceras
 Terebratula elongata
 T. sufflata
 T. n. s.
 Producta martini
 Producta antiquata
 Producta scotica
 Producta sigillaria
 Modiola Pallasi
 Sphenophyllum
 Gorgonia or retepora
 Plesiosia or calamity