

(Plants) Atlantic Land Gardeners
7 Damer Terrace
North Chelsea ^{on the} Atlantic
Cedar Square
Dec. 22. 83 **H**

Dear Sir William

I am afraid that I can
contribute little towards resuscitating
Atlantis that you do not already
know - I firmly believe however that
during the Eocene there was a direct land
connection between England + South
or Central America - not necessarily
continuous land, but sufficiently so
to have enabled plants, + above all,
land Mollusca to cross over - This
view I am well aware is at a discount
now, but we have seen such changes
of opinion before now that I do not
despair of seeing the question reopened.
In Hooker's Anniversary address so
recently as 1881 I or perhaps 4 of the
anxious thought to be settled ~~for~~ ^{for} ever are

now exposed - such as the formation
of lake basins, coral islands, volcanic
action, + the northern extension of Greenland.
Like all new theories, the Permanence
of continents + seas has been over championed.
It seems feasible enough that the abyssal
depths should always have been sea, but
the lesser depths could not exist without
movement, + the fact of volcanic islands
appearing from vast depths must cut
the ground away from those who argue
that upheaval is a priori an impossibility.

I can readily understand Dana + those
familiar with the stratigraphy on your
side the Atlantic being disposed to favor
the Permanence theory, but how can
we who live on the Chalk, where it is
1200 feet in thickness, (+ that only a part
of the original depth) + regard it as an
Atlantic ooze upheaved, believe in it -
This formation must have covered
an enormous tract, even if it did not

skeleton continuously from Kent to the
Crimea, & if such a change was possible
once, a change that converted an ocean
whose minimum depth was 500 fathoms,
& more probably between 1000 + 2000 -
why should it not occur again
& again - As to this I need only
refer you to the leading article in
Nature of Nov. 4 - 1880 - by Huxley.

The attempts to make the Chalk a
shallow water deposit have in my
opinion utterly broken down - You will
see something about this in my Pat.
Memoir on Conifers which will be
distributed next month - but those
who try to make out their case ignore -

- 1 The Changes in composition since
upheaval
- 2 They do not discriminate between
organisms living in situ & those drifted
(how few - Ichthyosaurs have their spines
& jaws)
- 3 They pass over the numerous forms
that are peculiar to deep water

- 4 They make no allowance for the effect on the Mollusca of higher bottom temperatures
- 5 They can point to no similar shallow-water formation at the present day, nor even conceive the conditions which would produce such.

They will find the Chalk alone a hard nut to crack when properly handled.

Now to take another aspect of the case. I must refer you to the *Geol. Mag.* for June. 1885. If what I state regarding *Flaustrina* is correct there must have been a land connection.

With regard to the plants the groups I have really studied & done with me unfortunately so very ancient that (Ferns & Coniferæ) that they are less valuable than more recently developed

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groups as evidences of geographical distribution - Ferns especially were differentiated in so remote a past that they may well have found means of becoming almost universally dispersed. Still you will see that several are specially characteristic of South America. I don't wish however to take my stand on any individual ferns or Conifers - as abundant angiosperms will be forthcoming whose evidence will be I am sure, incontrovertible. The more we know of Northern Tertiary floras the more impossible it becomes to maintain that tropical + subtropical species were passed from hemisphere to hemisphere in those latitudes. Nathorst in his last book says that Palms might have crossed in the latitude of Ireland but the Irish floras show that they did not, + what becomes of the theory if we are allowed to dry up the Atlantic to that extent - Since I

pointed the fallacy out to him he
has withdrawn the assumption. This
is why I wrote for your opinion about
the Greenland Palms - Nathorst says
one is a stem + he cant say what
the other is - written are Palms I am
very sure. I believe I'll put them in
out of sheer opposition.

But apart from fossil plants
what can be lower than Wallace's
attempt to explain the community of
living genera between South America
+ Australia - He invents an utterly
impracticable route + then has to
fill up thousands of miles of sea.

I think we shall find that that
connection took place via England
where the two floras are commingled
in a remarkable way.

The present distribution of land
mollusca is inexplicable under the

permanence theory, which only fits the
most recent developed birds, beasts,
& butterflies - whose genera have
probably come into existence during
practically the present land distribution.

I fear I shall exhaust your patience
& there is only one other class of evidence
known to me - the present state
of Devon & Cornwall, which have
sunk enormous in historic times,
& which evidently represent the axes
of submerged & denuded mountains
(see Boring on the Prowle in Devon)
add to this the evidence of a gigantic
river flowing from the West (not the
north west which was served) throughout
the Eocene, & you will understand why
I conclude that enough territory has
sunk into the Atlantic in that direction
to justify the theory of an Atlantis &
to negative the theory of the Permanence

of Continents + I seem as pushed to
its present extreme -

What have the opponents to
set up against this except theory?

I shall be delighted to be of any
use -

Yours very truly

J. Starbuck Gardner

Sir J. W. Dawson K. C. S. I