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## Letter from James Geikie to John Muir, 1879 Mar 1.

James Geikie

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Peter March 1 1899

Dear Sir

I am glad that you found my paper on the glaciation of the Outer Hebrides of interest. I quite agree with you that so many details as I give are not needed to convince any one who is conversant with the modes of glacial action that these islands have been glaciated from the South-East. But the "prejudices" if I may be allowed to use so hard a word of English geologists in favour of icebergs are hard to overcome, and one can only hope to do so by picking up the evidence that tells against that most swift & unsatisfactory iceberg-hypothesis.

I have long wished to see your Sierras and have read with the liveliest interest what you and Clarence King and others have written about them. Certainly their glacial phenomena must be very grand, and some day I hope to make some acquaintance with them. But my time is much occupied, and when I shall be able to go, I do not know. I send you

by this mail copy of a paper on the geology  
of Gibraltar, which may have some interest  
for you; inasmuch as it proves that the  
cold of the glacial epoch had its decided an-  
effect so far south as the South of  
Spain, and at a comparatively low ele-  
vation. I believe similar breccias or  
"glacial conglomerates" occur in many other  
regions in the South of Europe, and these  
I hope some time to describe. In short  
the more I study the Pleistocene deposits  
of our continent the more am I impressed  
with the wide-spread influence of frost  
action during our glacial period. By &  
by I shall hope to send you a little  
note on which I am now engaged, &  
which will give an outline sketch of  
the physical and climatic changes which  
have taken place in Europe since the  
earliest known appearance of man.

Hooker has just published a work on  
Morocco & the Great Atlas, in which he  
makes mention of the remains of consider-  
able glacial action in the valleys of the  
Atlas range. He also describes, great  
conglomerate or gravel hills which lie  
out upon the plains at the foot of the

<sup>mountain</sup>  
~~hills~~ - which strongly resemble the gravel  
& sand hills of formerly well-glaciated  
regions!

Yet some of our geologists will main-  
tain that there never was a glacial  
period - but that each particular region  
has been glaciated on its own account  
at some separate period! Mr. Campbell  
for example trots round the world in  
one year and a day, and finds no  
trace of a general cold period in our  
hemisphere!

I had recently a most interesting  
account by Prof. Chamberlain of the  
glacial deposits of Wisconsin. He  
describes the Kettle Range of gravel  
hills as an immense moraine, and  
seems to make out a very strong case.  
But I suppose you have seen his  
paper.

Excuse this rambling letter. And  
again thanking you for your kind  
letter, and for your kind offer to  
show me the wonders of glaciation  
in your splendid country - (I would  
fain start off now!)

I am faithfully yours  
James Fiske