"Geology in Nubibus." An Appeal to Dr. Wallace and others.

In his timely and important letter to you, Dr. Wallace congratulated us all on having got rid of a real glacial nightmare by sweeping away the tropical glaciation which has been favoured
by some high authorities, including himself, Mr. Darwin, and Mr. James Geikie. While we may all shaze in this congratula-
tion, we must not be remembered what it involves.

It has been the fashion with an extreme and aggressive school of
glacialists to postulate an excavating tendency in ice to which the
formation of lake basins and valleys-without-outlets in
mountain districts has been attributed. They will not allow
that rock basins are due to any other cause than "omnipotent
ice." And in a recent paper in the Quarterly Journal of Science
on the "omnipotence" of ice may be found the names of
several, like Prof. Bonney and Mr. E. H. IIey. They jeer at those
who have devoted much patience to unravelling the mysteries of
Plutonic action, like Prof. Judd and others, who attribute a
large number of lakes to dislocations and to foldings of the sub-
jacent rocks. It is no use, in arguing with them, to refer to
mechanical difficulties like those involved in conveying thrust
of a certain magnitude through a certain substance, which is
known to crush under a moderate pressure, nor to pro-
duce any number of mechanical arguments against the capacity
of ice to erode lake basins such as those in question; nor is it
any use appealing to the stupendous geological difficulties against
their cohering which have been accumulated by quite a
number of skilled geologists at home and abroad. All these
efforts are futile, for we are told that the ice to which appeals
must be made is quite a different thing to any ice we can ex-
periment upon or examine, and that it must not therefore be
measured by the ordinary laws that govern ice such as we know it,
and that appeal to transcendential ice is considered to be orthodox
science. If we come to the nineteenth century, an age when induction
is supposed to have become a supreme law to us all, and when
a priori postulates are generally discarded from the realm of
physical research. Let this pass, however, and let us test the
question in another way. Let us test it, in fact, by this very
case of Brazil.

There has never been a glacial period in, nor are there traces of glacial action in the highlands of Brazil, we are told by
Dr. Wallace. Granted. How then can Dr. Wallace, and those
who agree with him in this matter, explain the existence
on the plateau of Bahia of perhaps the largest and most remark-
able collection of rock basins in the world, rock basins exist-
ing, too, in close juxtaposition with most perfect examples of
giants' cauldrons on the largest scale. This is assuredly a
dilemma for the transcendental school of geologists.

Let me quote from Mr. Allen's graphic descriptions of these
rock basins. Speaking of the plateau of Bahia, he says: "Over
this whole region there is an almost entire absence of loose
materials, except on the surface . . . . slight variations in the
alternate which rarely differ more than 20 or 30 feet in eleva-
tion. In the rainy season many of these basins become filled
with water, forming shallow lagoas varying in area from less
than one to more than 50 acres, from most of which the water
evaporates in the dry season . . . . So numerous were these
lagoas that it was done move than 50 miles that no unobstructed
time to speak of this region in my notes as the "Lake Plain." Almost
everywhere the elevations are evenly rounded, indicating that
the rocky crust has been exposed to rain and probably long
continued abrasion. But the absence of abraded materials
seemed most remarkable; very rarely were even loose boulders
observed, though a few such, which were repeatedly noticed. At
frequent intervals there were irregular holes in the rocks, usually
nearly filled with water, to which the inhabitants give the
name of "caldeiraos." These caldeiraos are of frequent occur-
dence, and is at issue with the mechanical properties of ice so
far as we know them, and with the observations of practised
observers of the first rank. I am bound to say that those
geologists who habitually make appeals to forces in Nature,
and to properties of matter which are purely hypothetical and
unwarranted by experience, are leading us back to times when
Aristotle and deductive reasoning dominated European thought,
and when Bacon had not yet taught us better things.

My attention has been called to an oversight in my previous
letter. Among those who many years ago did good work in
dissipating the particular glacial monster that was generated in
the valley of the Amazon's, was my old friend Dr. Woodward,
whose papers on the subject in the volume of the "Ann. and
Mag. of Nat. Hist." for 1871, pp. 59 and 101, I had overlooked.

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30 Collingham Place, Cromwell Road, October 27.