

Royal Observatory, Greenwich,
London, S.E.

1871 November 29

My dear Sir

I have received your
letter of Nov. 18, on the two
subjects of — Pendulum experiments,
in the Bardouneche tunnel —
and observation of the Transit of
Venus with a new arrangement of the
Spectroscope. I defer for the
present my answer to the latter, and
advent only to the Pendulum
experiments.

I think that the Pendulum
Experiments in the tunnel and at

At Rio de Padre Secchi

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a point, in or near the same vertical, at the top of the col are very deniable.

But I doubt whether they will give valid information upon the mean density of the Earth, on account of the magnitude and disturbing forces of the great mountains near the tunnel. (I regard this as a great fault in the Schepallien experiments: it did not exist in the Harton experiments).

But the value of the experiments would be greatly improved by the following extension. Let the same pendulums be observed on the low plain, (as in the neighbourhood of Turin), and also on an island (as Elba).

^{experiments}
They ~~will~~ would then be nearly similar to the experiments lately made in

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India. They would give much information on the difference of character in the sub-strata below mountains and below sea. Long ago I suggested that the existence of mountains necessarily proved the existence of less-dense matter below them, and the Indian observations appear to support this view.

With regard to the kind of pendulum, I should prefer the invariable pendulum if it is certain that the surface of the knife-edge has been very carefully ground to contact with the surface to which it is screwed. I do not think that perfect confidence on a point

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like this can be placed in any artist.
Perhaps I could make the examination,
at least with the assistance of an
intelligent engineer. I know,
by experience, that a knife-
edge may be bent by the pressure of
screws, so much as materially to
affect its rate. - Several pairs of
pendulums were prepared by Mr. Bailey,
which are now in possession of the R.
Astronomical Society; these might be
examined.

When you are engaged in the ex-
periments, ^{perhaps} it would not be difficult to
try both the invariable and the convertible
forms. I am, my dear Sir, Yours very truly,

~~George B. Airy~~
~~Project Director, Greenwich~~
~~London, S.E.~~