

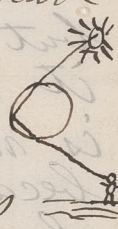
Montreal, Jan, 27, 1870.

Acc. 976

Dear George,

I received your very interesting letter, & also ~~the~~ the paper which you sent me, which contains some very interesting facts & discoveries. With regard to your letter; in speaking of Halos you say that the light is twice refracted & once reflected, now I don't see how this is, for if the light is reflected on the inner side of the drop it would change the direction of the light very considerably & we should have a rainbow rather than a halo.

Perhaps you would take the trouble to explain this to me in your next letter, by making the drops of a large size as in the accompanying figure; & also I don't quite understand about the light in the case of parhelia being twice refracted & once reflected, &c.!!



I think that that is an admirable theory as regards the two mock-suns but if you would draw me some large spicules so as to show how the light goes through them I would be much obliged. Perhaps too you would try to think of some theory as good, concerning the "prismatic colours" as I call them which are seen in clouds near the sun. I have observations of all that I have seen & find that the colours are always blue & red, (with one very doubtful exception when I thought that I saw yellow), & that these said colours are not placed the red always placed next the sun & the blue further off, but mixed in patches. Also that it always occurs when the temperature is near the freezing point; now, is this because the right requisite kind of cloud ^{can} only be formed at that temperature? They also only take place in winter; & this would seem to point to the cause being spicules (or prisms) of ice

as in the case of the parhelia; why then does it take place only when the temp^{ure} is at, or about the freezing point?

Perhaps you will think me rather ~~long~~ lengthy on these subjects, but if you are as interested in them as I am you will not grudge the space I have occupied.

We (at school) are having examinations, ~~or~~ ^{or} rather revises, of our various ~~lessons~~ lessons just now. We get ^{to learn} about 40 pages of history, for instance, which we have gone over ^{before,} ~~this~~ ~~year~~ & are excused our other lessons, & then we take all the morning is saying ~~this~~ it. We will be having the

certificate examinations presently (They are to commence on the first Monday in March), so that I will not have much time to write to you; for I will want all my spare time to "grind up" for them.

Mr. Barnjum is going to give a gold medal & three silver ones, for the best gymnasts; the competitions ~~is~~ to come off in May, & we, who are going to try for them, are required at present to

come at 8 o'clock A.M. Mondays
Wednesdays & Fridays, so that
this is an additional drain upon my
time. You therefore must not expect very many
letters, ^{till} after March.

The flower buds which ~~were~~
came on your accacia were only
born to die, as I suppose you have
concluded long ago from not having
heard of them since the first time
I mentioned them. The figs are
beginning to put forth their leaves
also.

Father Chinique (excuse the spelling) is
staying at the house just now.

This winter ~~is~~ is a very remarkable
one; (as were all its predecessors) it is
nothing but a succession of thaws.
So that there is only about 6 in (!) of
snow on the ground. On a Friday
morning the ~~the~~ thermometer was at -23°
(as I ~~have~~ told you) & on Saturday morning
at 11 o'clock it was raining! a change
of 55° in 27 hours. This is a specimen
of the winter, though of course an extreme
case. Your affectionate brother William.