

Acc. 1010

Tues: 2 Aug. 1892.

My dear Bernard,

Very many thanks for your letter, & the suggestions you give. ~~It~~ I made seven trials at first with the standard mixture, & found they all went out when half burnt, or else went off so fiercely as to loose water. This difference was due to the difference in ramming into the tube; between shaking down a little by tapping it, and a very light ramming with ~~the~~ a lead pencil. It is thus altogether too sensitive -

The "diluant" I have now tried are powdered glass, kaolin, emery flour, & alumina. The kaolin I suspect of undergoing some change; the alumina is better in this respect, tho' it gives a much larger amt. of white crust than the oxidizing mixture alone. To reduce the quantity of the diluant, I have also reduced the energy of the mixture; and now use:-

3 parts	chl. potash
2 "	nitre.



With this only 2 grams of diluant  
are required instead of 4 or 5 grams,  
with the more energetic mixture.  
I find on the whole emery flour the  
best; in a pulverized condition it is  
not so chemically active as in the  
form of precipitated alumina, and  
it undergoes no change during combus-  
tion. I sh<sup>d</sup> like to try Zircon  
if I c<sup>d</sup> get it already powdered.  
The feldspar I am afraid of, as it  
is almost sure to combine or loose  
water; & the kaolin is much the  
same thing after all.

I have got a new jar, specially  
for the purpose; & a special Centigrade  
therm<sup>r</sup> with long degrees which I can  
read easily to  $\frac{1}{50}$ <sup>th</sup> degree. Hence  
I was much bothered to find the  
mixture acting so badly in burning.

It is much cooler these last  
few days. I hope you are all  
well.

Yours sincerely  
William -



Please let me know if there is  
anything I can do for you in town.

3 Aug.

P.S. I am very much obliged for  
your further letter of Monday; &  
I find as you say that the emery  
flour works best on the whole.  
The alumina gives slightly lower  
results, as the large amount of  
crust it forms appears to surround  
some of the coal dust & prevent  
its burning. The emery is too  
heavy to blow out of the tube,  
but settles down, & makes the  
combustion slow towards the end.

~~It~~ (It was a mixture of equal  
parts of Chl potash & nitre that  
went out; the 3 to 2 answers).

If you wd like to write a  
monograph on the Calorimeter,  
I can furnish you with some  
interesting details in these matters!

W.

W. B. S.

Aug 2/92