

liquid be added we may  
produce opacity by a small  
quantity if it happens to  
absorb the rays transmitted by  
the other liquid. Just so in  
conductivity, <sup>100</sup> per cent of a  
new element <sup>added</sup> will produce an  
enormous additional resistance  
when 10 per cent of the previous  
element <sup>added</sup> will hardly affect the  
conductivity. I am struck in  
many other ways by the analogy  
between the passage of electricity  
through conductors & the passage of  
light through semi-transparent bodies.  
But I fear I shall weary you

Very yours sincerely  
Wm. J. Macleod

15/106 Nov. 25. 1899

My dear Fitz Gerald,

Thank you for your

letter about Hertz's I am not  
quite hopeless though Hertz's  
at first surprised his uncle.  
I happen to be so much hurried  
with work just now I have had  
no time to go on with the matter  
I am with best wishes  
Believe me with very best wishes

15/100

but your criticism is so very valuable that if you have time to look at it, wd. read the details, I sh<sup>d</sup> be glad. My general

conclusions regarding the effect of alloys on conductivity is that -

(1) the resistance less the atomic weight of the added element the greater the increase of resistance produced.

(2) that <sup>when</sup> ~~is~~ an element any body

~~the~~ like iron <sup>is</sup> alloyed with <sup>varying quantities</sup> of a second metal the increased resistance produced resembles the selective absorption of light produced by the addition of various quantities of a coloured liquid to a given length of a semi-transparent medium. That is to say the first additions obliterate down most rays of light until a point is reached where further additions have little if any effect on absorption. If now a second differently coloured

85  
425  
680  
7225

15/1000

P. S.

Just one line about  
Educational matters. Why is  
not a Lady Commissioner  
appointed to fill the recent  
vacancy? Surely there is a  
matter of obvious necessity for the  
first <sup>side</sup> of education.  
I have now a large &  
flourishing night school in  
my workmen's club here, &  
working men, mostly coal bearers

15/10/6

and of lads, none of whom have  
had any regular school  
instruction. They are so enthusiastic  
I have literally to turn them  
out at 10.30 P.M.

You will be pleased when  
my sister has just won the  
Howard medal & prize of £ 20  
given by the London Statistical

Soc<sup>y</sup> for the best paper on the relation  
of the State to neglected children: a  
new thing for a lady to obtain.