

CENTRAL TECHNICAL COLLEGE,

Exhibition Road.

London, November 30<sup>th</sup>  
S.W.

26/38  
My dear Fitzgerald

Duddell, the student of mine who made and exhibited the Oscillograph is now engaged continuing the experiments made by Firth and Rogers on what they called the negative resistance of the arc between solid carbons, as distinguished from the positive resistance of the arc between cored carbons.

By superimposing on a direct current

are a small alternating current of higher and higher frequency he has got most interesting results, but the special dynamo I have provided him with will not give a frequency of more than 9000 periods per second without the risk of the machine flying to pieces.

Now what he wants is an alternating current of about  $\frac{1}{2}$  an ampere, at say 10 volts, with a frequency going up to 20,000 or 30,000 periods a second, with a <sup>wave of</sup> practically constant amplitude and sinusoidal in form.

He has been trying a Tesla method



using a condenser, self induction,  
and a spark gap but the result is  
not satisfactory owing to want of constan-  
cy in the amplitude of the current wave

Have you a suggestion to help us  
with?

Yours  
W. R. Ayrton

Very sorry that I cannot come to the  
Royal Society tonight.

26/38