

stated, where the case demands the use of air re-heaters they be installed also, and particularly where there are continuous running motors and pneumatic tools used in the open. I would like to touch on the subject of compressed air for railroad shops and other general uses but I am not in possession of such information at the present time to do so. In any case, Mr. Duguid has covered the subject very completely and I must take the opportunity to congratulate the Club on having a member who can give us such an excellent and instructive paper.

And I hope that we will have a hearty discussion from all the members present.

Chairman,—

We shall be pleased to hear from Mr. Garden on the subject.

Mr. Garden,—

I am not familiar with the subject enough to discuss it. However, I have been very much interested in the remarks made already.

Mr. Geldart,—

Mr. Chairman and gentlemen, this is a very interesting subject to us all, and I presume the discussion here to-night is going to show what we are up against and show how to overcome some of our difficulties. I had thought perhaps we would hear from the Street Railway people as they have a number of compressors installed.

I would like to say, gentlemen, that compressed air as a power is one of the most interesting things to engineers in general, and has become more important during the last quarter of a century. It has been the means of introducing some very important labor and time saving machines. I think it is a good idea to get thoroughly acquainted with all its points. Mr. Duguid has thoroughly gone over the subject and it does not leave much for a man to say after it is gone over already.

With reference to the economy of two stage compression, you know one of the difficulties of compressing air is to overcome the heating during compressing. Now a two stage compressor will overcome this much more readily than a single stage by compressing in first cylinder to 27 pounds cooling to say 60 degrees and compressing to 90 pounds to 100 pounds in second cylinder you will have a lower temperature of 100 to 150 degrees, increasing the capacity of your compressor in volume efficiency 10 to 15 per cent. Another important point is by using two stage compression and duplex engines you are enabled to obtain a much earlier point of cut-off, say half stroke. When using single engine much later cut-off at least