

some value of the steam by passing it through the engine and doing work, whereas, in the other case, no benefit is derived from the steam before it is reduced.

Mr. Lewkowicz,—

I should like to know what is the difference in the volume of steam passing through the radiators in the two cases mentioned in a given time, that is, the cubic feet of live steam, and the cubic feet of exhaust steam? We can readily understand that where there is an unlimited supply of exhaust steam passing through the radiators that the volume might be greater, yet give off less of its heat than a lesser amount of live steam, as the steam in passing through the engine would lose a certain amount of heat, but having an unlimited supply of exhaust steam the volume can be increased to make up for the lower temperature. In the case of the live steam the tendency would be to economize and just keep enough steam going through the radiators to give the required radiated heat. Have you any data in reference to this matter of relative volume passing through the radiators in a given space of time?

Mr. Wickens,—

If I understand the question correctly, you want to know the difference in the volume of steam from a steam engine, and the volume of live steam necessary to obtain the same results.

If you reduce the pressure of the steam you reduce the temperature, and the more you reduce the pressure the less heat units you will have in the steam, consequently, the greater will be the volume required. Steam at 15 lbs. gauge pressure has 213.08 degrees F., 26.26 cubic feet, and weighs 1 lb., while steam at 115 lbs. pressure has 337.8 degrees F. and 3.86 cubic feet, and weighs 1 lb. The question whether the loss of heat units is greater when the steam is passed through a reducing valve, or through an engine cylinder, is a point that seems difficult to understand.

What reduces the pressure of steam is when it does some kind of work. It does not matter whether it is forcing its way through a reducing valve, pushing a piston, or heating a surface. In doing any work of this kind the temperature of the steam is also reduced; however, if a thermometer is placed on one side of a reducing valve, and another one placed on the other side it will be seen that the loss in heat units is less than should be, showing that in this case there is a small