

draft? In some systems they simply take the air in through the ash-pit and blow it up directly through the grate. The system that I have been accustomed to, was the one where they brought the air through ducts right through the smoke-box, and in that way heated the air before it went into the ash-pit. Do you think it is detrimental to take the air directly from outside and blow it up through the ash-pit, or do you get more efficiency by bringing it through ducts through the smoke-box? I think that if you should have any holes in your fire, the direct draft is detrimental to the heating surfaces, especially in return tubular boilers.

I understand that this is getting somewhat away from the paper, but still it has reference to efficiency and economy.

Mr. Helps,—

In reference to the life of the boilers, fourteen years was stated in my paper and 50 years for the stack simply to show that in figuring the cost of depreciation, the same percentage should not be figured in the case of the boilers as in the case of the stack, as I explained that, for instance, 7% might be allowed for the boilers and only  $\frac{1}{2}\%$  for the stack. For instance, I said you might put the life of the boilers at 14 years and the life of the stack at 50 years or 60 years, but in figuring up the cost of depreciation you should figure on each as a separate unit. The life of the boilers would, of course, vary according to the conditions under which they were working, etc.

In regard to forced draft. This is a little outside the paper, and it is a matter to which I have not given much thought. However, I think the latter method described would certainly meet with my approval in preference to the former. I think the method first described is likely to be detrimental to the flues.

Mr. McRobert,—

Coming back to the question of cost. Do you think it more economical to use forced draft or natural draft? Of course, we know that with forced draft you can burn so much more coal to the square foot of grate area, but what has been your experience as regards the use of forced draft compared with natural draft as regards the matter of cost?

Mr. Helps,—

I think, Mr. Chairman, this is a little too far out of the realm of the paper. However, I will say this, that I consider this is a matter which would have to be adjusted to meet the