

work and materials were satisfactory for the purposes in view, a good portion of the testing might be dispensed with.

Non-conducting material, or false covers should not be applied to a newly erected pumping engine until the construction has been well tested by working steam pressure and all leakage and defects completely remedied.

Then, after the various joints and parts have been shown to be steam tight under working pressure, the heat surfaces where radiation would represent a loss of useful heat, should of course, be protected by suitable covering, and where practicable or desirable, an outside finish of lagging applied. The type of lagging now much used being heavy sheet steel securely fastened to appropriate framing and flanges, and held in place by bands of polished metal. The old time wood lagging generally of black walnut seems to be passing away, although as a matter of appearance will probably never be excelled even if not quite so durable.

Mr. Wickenis,—

I am sure I have enjoyed Mr. Walsh's paper very much indeed. He has gone into the matter very carefully and also intelligently, and has given us something to think about. One thing which strikes me forcibly, and which the paper has proved rather conclusively is, that if you wish to put in a good water works you had better obtain the services of a good designing engineer, and do as he tells you, then you will have success. A number of our small towns in building a water works plant, turn the matter over to a committee consisting of a tailor, blacksmith and a storekeeper, and when you consult with these gentlemen, you generally find that they think they know more about putting in a plant than anybody else. The result is that you have a very peculiar water works. There is no doubt, however, that the time will come when all towns requiring water works, will get the advice of an expert and instal machinery to suit their requirements. It is not long ago that the small towns fitted up water works with duplex compound pumps, and if they got a duty of thirty million foot pounds they thought they were doing well. Latterly contractors and engine builders are building equipment to suit smaller plants which will give much better efficiency. Take plants pumping two million gallons in 24 hours. There are some of these plants running which are operated with a compound engine directly connected to the pumps, and which will give 115 or 166 million foot pounds per 100 pounds steam duty per day. That is the old style. There is no doubt that the present ideas are to use high pressure superheated steam, to jacket the cylinders and to do everything possible to make the use of steam as cheap as possible. Then the