

## LEAD VS. IRON FOR SUPPLY AND VENT PIPES, FROM A PLUMBER'S POINT OF VIEW.\*

IF we consider the question as an engineer would when seeking the most suitable material for his purpose, and divest our minds of all prejudice and consideration of how it will effect our individual interest as plumbers, or the business in general, we will sooner arrive at correct conclusions. If it is truth we are seeking, and not specious argument to bolster preconceived notions, we certainly do so.

In past times lead was used by plumbers almost exclusively for water pipes and other purposes. It was the chief material a plumber was called on to use, and it was necessary for him to be most skilled in working to be a success in his business. It was almost considered the only metal fit for that purpose.

Now we find it practicable to fit up the largest buildings in the most desirable manner, with the finest open work, and not use an ounce of lead pipe. The tendency of the demand at the present time is for substitution of other metals in preference to lead in the plumbing business. This tendency is the verdict of public opinion that condemns lead, and relegates it from the position of primary importance to a secondary one in the plumbing business. We may grieve at this tendency, but it is useless for us to kick against the progress of the times. It is better that we adapt ourselves to the situation, keep in line with all improvements, and not attempt to impede them because they necessarily dispense with the skill we have acquired.

Lead pipe (which was sometimes tinned inside) was formerly considered the most suitable for the conveyance of water from the mains to all vessels used for domestic purposes. It certainly answered the purpose well. The charge of lead poisoning was sometimes laid to the use of these pipes, but few cases were ever proved. The percentage of people using this pipe suspected of suffering from lead poisoning was so small as to be of little importance.

To the Pacific coast iron pipe came with the early gold seekers, and was probably used by them as water pipe, because it required less skill to join and lay it. Black iron pipe was soon found to be useless on account of rusting, but galvanized iron pipe answered better, and was first introduced in small houses for conveying cold water only, and was not considered suitable for hot water at all. As experience showed no objectionable feature in this material, it began to be used in better houses, but for many years iron was used for cold and lead for hot water. Gradually the use of galvanized iron pipe extended for hot water, until now it is almost the only kind used. Forty years' use on this coast has demonstrated that for supply pipes galvanized pipe is well adapted. The zinc coating has proved a thorough protection which makes it very durable.

In comparing the several advantages that lead and galvanized iron pipe have when used for water supply, we find that, galvanized pipe being harder, it is less liable to be damaged by accident, as it is able to resist such accidents as nails being driven against it and the gnawing of rats.

Being stronger it requires less support and is never found hanging in festoons. It is seldom broken with fair usage, when once covered up in good condition. It seldom requires any repairs, except when it is burst with

frost. It is not injuriously affected by rapid changes of the temperature of the water it carries in any degree above the freezing point, as is lead pipe if allowed room for expansion.

The cost of galvanized iron pipe and the labor needed for its use are less than for lead pipe. With the introduction of nickel-plated supply pipes for connections of open work, there disappears the last obvious advantage of lead for supply pipe. Lead pipes are often taken out of houses, to be replaced by galvanized iron pipes, but never the reverse on this coast.

If this be the result of the experiment of using galvanized iron pipe for supply pipe in a new and venturesome section of the country, it only indicates what will be the result in older and more conservative sections of the country. We find plumbers in eastern cities getting alarmed at the increased use of galvanized iron for supply pipe, and claiming in the trade papers that it becomes worthless in three or four years; that it rusts at the ends and at other exposed places, and is generally no good. Forty years' extensive experience with the use of it on the Pacific Coast demonstrates that such is not the case. The continued growth of its use from a modest introduction of it as a cheap and convenient substitute to its present position, when it has driven lead supply pipe entirely out of use, and that too in face of the hostility of the men who had to work it, proves that it must have merits of no small degree.

When used as waste pipes iron pipes do not have the same advantages they have as supply pipes. Wrought iron pipe unprotected by covering is not suitable for vent pipe, and should be discarded for the reason that it rusts quickly internally, which rust soon begins to fall from the vertical portions and closes the bottom of the pipe. Galvanized iron pipe is better, but it will not withstand the action of sewage or sewer gases, and therefore is not reliable.

Iron pipe dipped in asphaltum and thus protected has no known weakness, and the great success of the adopting of iron dipped pipe for soil pipe would justify us in expecting equally good results from the general adoption of such pipe for sewer ventilation.

Lead pipe for ventilation has many advantages to recommend it if properly supported and protected. Lead pipe is capable of resisting all chemical action of sewage or gases, and, not being exposed to great changes of temperature, there is little danger of breaking by contraction and expansion, as is sometimes the case with waste pipes which convey hot water. The smoothness of the interior of lead pipe and its gentle curves make it most efficient and desirable on account of the small friction which it offers.

## REQUIREMENTS OF GOOD HOUSE PLUMBING.

A PAPER entitled "Improved Methods of House Drainage," read before the Architectural League of New York, by Mr. Paul Gerhard, C. E., Consulting Engineer for Sanitary Works, contains the following on the subject of good house plumbing:—

The limits of this paper do not permit my discussing in detail the requirements of water closets, and I must pass on to review briefly the other plumbing appliances of houses.

Speaking of wash basins, we may distinguish four principal types, viz: 1, tip-up basins; 2, chain and plug

\* A paper by William Eccles, of Portland, Oregon, in the Gas Light Journal.