

There are some instances in which it would be safe to omit the drain trap, but they are special. In some of our high buildings where the entire drainage system from the outside of cellar walls to the roof is constructed of heavy cast iron, said trap might be safely omitted, but only where such conditions exist should this be done.

In the case of an empty house, as above mentioned, the trap is the only safe-guard. Its seal would be maintained by every rainfall, the fresh air from the inlet pipe would keep the drain sweet, and evil resulting from dried-out traps would thus be minimized.

As I said before, all traps should be self-cleansing, and to my mind it is clear that the drawn lead trap fulfills all the requirements of a self-cleaning trap, and while it is necessary to have sufficient depth of seal, (one and a quarter inches is little enough), it should not be more than two inches in depth for more than that will constitute a filthy cesspool.

Every trap should be ventilated mainly to prevent siphonage, but also to prevent air pressure, and the formation of gases which have a tendency to form in unventilated waste pipes, and which may be absorbed by the water in the traps and given off again into the house. These trap-vent pipes should rise separately from their connection with the traps and connect into the soil pipe above the highest fixture, or they may be combined by connecting into one main pipe, but such junction should be at least six inches above the highest of the adjoining fixtures, otherwise, in the event of a stoppage in the waste pipe, the waste water would rise until it reached the vent pipe through which it would continue to flow until it in turn became stopped up, thus rendering it useless.

Close to the connection with the trap, a cleaning screw should be placed on the vent pipe for convenience of inspection or the cleaning of the trap or vent pipe at its connection with the same. Local ventilation might also be furnished to each trap. This should be connected to the inlet side of trap as remote as possible from the water seal (to prevent evaporation) and carried to a heated flue. Each trap thus becomes an outlet for vitiated air as well as for waste water.

I have recently made some experiments on the durability of the seal of a one and a quarter inch trap ventilated on each side of the water seal as above described. The depth of seal was one inch and nine-sixteenths. It took just six days to destroy the seal, and after the seal had been broken, the blaze of a match was still attracted down into the trap when placed near the mouth of it. I then cut off the local vent, leaving only the back-vent or break-siphon; and although the trap has been placed in a warm kitchen it has taken just twenty-four days to reduce the seal one inch and a sixteenth; after the seal has been entirely destroyed, I intend testing the durability of it without any vent attachments.

It would thus appear, that the objections raised against vented traps on the score of evaporation are not tangible.

INSUFFICIENT ACCOMMODATION FOR STEAM PLANTS.

THE *American Engineer* says:—"The past few years has seen a change in the building question as in many other problems of the time, and as a result it is a rare exception to find, in any of our larger cities, any large building erected, that is to be used either for mercantile, hotel or office purposes that is not heated by steam, hence have steam plants as a part of the building. In fact it may be said that steam power forms a feature of all of our large buildings.

However apparent the fact is, that a steam plant is to be located in the great buildings of this age, the architects in Chicago at least, seem to design the building with a view to every other connection, and then after that is done, the steam plant is suddenly thought of, and as they have made no provisions for it, they stick it away down in some corner, often times under the pavement, with hardly room enough to get it in, let alone room to work around it.

To any one concerned in the matter it can not but prove an interesting trip to go about among the gigantic office buildings of Chicago, and note the cramped up arrangements of the machinery department, and to see in what a circumscribed space the engineer must perform the duties assigned to him."



PLASTERING AND STUCCO WORK.*

BY JAMES JOIN.

IT has not been the fate of this simple, durable and inexpensive material to escape the assaults which every good thing in this world must encounter at one time or another. It has been called unclean; but it is not so of itself. Like many another wholesome and useful medium, it can be so illy made and be so indifferently applied, as to offer to dirt and insects abiding places due to the perverted ingenuity of man, not to the inherent defects of itself. In spite of all that has been said against it, it remains the universal lining for dwellings throughout the civilized world. Wealth may incase walls and ceilings in decorative woods and metals, but for the mass of mankind, plaster must continue to be the simplest, cleanest, least costly and most enduring finish for homes. The health of the vast majority of mankind is, therefore, largely dependent upon the materials used in its mixture, and the principles which shall actuate its employment.

It is undeniable that the custom that obtained some years ago of applying plaster in highly ornate designs, was for domestic purposes unsanitary. The isolated, convoluted and otherwise multifarious designs which used to be spread out upon ceilings, in cornices or special pieces, are gradually passing out of use. Their innumerable crevices served only as receptacles of dirt, in which the deposits were continuous.

The ornamental uses of plaster having been reduced by good sense and good taste, it remains still the most vigorous, as it is the oldest vehicle for carrying down to generation after generation the masterpieces of art with which the golden age of sculpture enriched the human race. Humble as its components are, common and cheap as it seems beside marble, and paltry when compared with the metals that have, to a considerable degree, taken its place for reproductive uses, it still preserves the plastic art, and enables youth to contemplate antiquity in its noblest achievements. To-day plaster is revolutionizing industrial art; for us, and, in all probability, for those who are to come after us, plaster, lowly and cheap, but docile and durable, is the connecting agent with this greatest of men's indorsements in the past.

Plaster thus employed in duplicating works of marble, iron and bronze, is to-day extending the finest industries, modern and ancient. The erection of the new museums in England, near the great manufacturing centers, would be next to useless were not plaster available for distributing fac-similes of the works, whose grandeur has made the name of Greece imperishable, and whose usefulness in development and the study of form, for all arts, is acknowledged to be unequalled. So potent is this simple medium, therefore, that it serves to-day as effectually as marble itself for the perpetuation of fine art; and by its endless variations of models, copied from every other material known in history, it is the supreme teacher of design. The reproduction of classic works at Kensington, and their dissemination throughout the provinces of the United Kingdom, has had the effect of making France fear for her supremacy in fine industrial productions. The important part that plaster thus plays in the Old World, it will continue to play in the new. Wherever art places its altar, plaster will be there as its hand-maid; and though it may be abused by carelessness and calumniated by more pretentious rivals, it must remain the most faithful friend of progress in taste, in science and in decoration.

Noble and varied as may be the uses to which plaster has and may be applied, I regret to say that the art of applying same, as a vocation, for the lining of dwellings is to-day so unremunerative to the artisan, that it almost ceases to enlist the skill and intelligence that the art should command. This is due mainly to the want of appreciation by the architect and owner, whose only thoughts are for a semblance, for the time being, and are tempted by the questionable economy of saving a few dollars,

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