STEAM HEATING DATA

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STEAM HEATING DATA,

BY

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EXPERT

IN

HEATING AND VENTILATION

PRICE, FIFTY CENTS.

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NEW YORK.

THE author intends periodically to issue additional concise *data* on the science of heating and ventilation, in small books of this form. This is the first of the series, and to all professional men who receive and preserve the originals intact, there will be issued a bound volume of the completed series upon request.

To architects interested in the science and detail of the subject of heating and ventilation, a prompt answer will be sent by letter to all special enquiries.

The author also desires to say that though his son WM. J. BALDWIN, JR., is interested in the BALDWIN ENGINEERING CO., of New York, that the said company is debarred from bidding on any work for which he is professionally engaged for reasons that are obvious, and that the two businesses are entirely distinct.

STEAM HEATING DATA.

THE object of this little book is to provide ready and approximate preliminary data for the architect or engineer who desires to find the first things necessary for the installation of a steam heating or hot water apparatus.

The rules given are the preliminary ones used in the drawing office of W. J. Baldwin, M. Am. Soc. C. E., designer and expert in heating and ventilation.

They are for heating and ventilating work for which practical and accurate rules are required. The rules are all based on strictly scientific and engineering data, but they are divested of all unnecessary refinement, which for ordinary purposes would only add complication to the task, without getting very much nearer the actual truth.

They are the rules that are required by one when designing a building by which he is

enabled to provide space for boilers, find the horse power, obtain the area of the grate, approximate the coal required, find the size of his chimney, etc., and they are the rules that the ordinary person wants either to commit to memory, or to have at hand in a concise and simple form when wanted.

Explanations will be given when variable factors actually exist. In general, however, I desire to confine myself to the fewest special factors; some of those factors being obtained by multiplying a number of simple factors together.

When a set of plans are placed on my drawing boards, the first consideration by myself or my assistants, is to determine the amount of condensation of steam that has to go on within a building, when that building is properly warmed by the particular method of heating or of heating and ventilation that the owner or the architect may desire to adopt.

The condensation of a building may be found by two different methods. One, a very simple one,

being applied to direct radiation, and one, a little more complex, being used when forced ventilation or large quantities of air by indirect radiation are required. The last method will be considered first.

CONDENSATION.

It may be asked here, "Why the question of condensation is the first consideration," and in reply I will say, that it furnishes us with the first item of data on which to base all our other calculations. For instance, when we find the amount of cooling or condensation that is to take place within a building in the coldest weather, we then know the amount of water that it is necessary to evaporate to do this work. Having the amount of water that is to be evaporated, we can then obtain in any order we please, the size of the boiler necessary to evaporate the water; the amount of coal or other fuel that will evaporate the same water; the size of the grate on which to burn the coal; the size and height of chimney necessary to supply air for combustion;

the size of the radiators necessary to condense the steam ; the size of pipes necessary to convey steam or hot water to the radiators ; and all other attendant data which will develop as we proceed.

Conditions for a School.

Let us take, for instance, an ordinary primary school building of eight rooms, with say fifty children to a room, (an average condition for primary schools,) and that we have to warm and ventilate this building so as to comply with what is known as the Massachusetts law, which provides that each occupant of the room has to receive a quota of thirty cubic feet of air per minute, which is equivalent to 1,800 cubic feet of air per hour per child. This, therefore, on the basis of the minimum quantity of air allowed by law, and making no allowance for the teacher, will call for the admission of 90,000 cubic feet of air per hour to the school room. Some allowance, however, should be made for the teacher, and also some little factor for safety so as to prevent working too close to the minimum quantity