

by lining ordinary galvanized-iron pipe with 1 in. of a patented, porous insulating material that will not disintegrate in water and withstands a temperature of 500 deg. fahr. or more.

The result is that the interior of the pipe, being well insulated, reaches a maximum temperature in a comparatively short space of time, while the exterior is practically cold. This makes for a minimum amount of condensation. The small amount of condensation taking place during the first 5 or 10 min. that the appliance is lighted, is absorbed on the



FIG. 52. GAS-FIRED HOT WATER HEATING UNIT IN PACIFIC COAST MANUFACTURING PLANT

surface of this insulating material, and then is evaporated and passed off in the form of water vapor as soon as the interior of the flue pipe has reached a temperature of 212 deg.

In all cases a gas flue or chimney should be treated exactly the same as flues from oil, coal or wood burning appliances and should be carried to the roof of the building with a suitable top to make for a proper draught. Running a pipe to an outside wall and up 3 or 4 ft. does not make for a proper draught and in most cases causes a down draught. Therefore, this type of vent should never be used.

CHAPTER XII

AUTOMATIC HEAT CONTROL

AUTOMATIC heat control, despite a popular impression that it is a luxury, is one of the fundamental principles of life, and without its influence life on the earth would be impossible. The intelligent application and control of heat in one way or another is a fundamental of civilization. It is almost impossible to conceive of any contact we have with any physical adjunct of civilization in which heat and the accurate control of heat has not had a major influence.

Temperature control is achieved by preventing over-heating. It develops from this that automatic heat control in itself must always effect an economy.

In order to be practically useful, heating plants must be able to warm living spaces when extreme cold prevails outside. Extreme cold outside is rare, occurring perhaps during 5 per cent of the heating season. Unless it is held in check, the big, powerful heating apparatus which must be provided against the 5 per cent time, will overheat the occupants and waste their stored and perhaps irreplaceable fuel during 95 per cent of the heating season.

NEED OF HEAT REGULATION

By far the greatest number of heated rooms in the world probably have single direct radiators, and the tendency is for these radiators to be hot all over, or cold all over. Variations of many degrees in temperature in 1 hr. are possible. With stoves or fireplace the intensity of the fire can be varied, as the cold outside indicates, but the grate must be big enough to burn the maximum amount of fuel, and even a grate or a stove is difficult to control for one-half or one-quarter capacity.

Ventilated rooms, especially when fans are used, may have very rapid air changes, and the temperature variation may be many degrees in even 1 min. Herein lies the great opportunity for automatic heat control, preventing the unbearable sudden changes which cause drafts; promoting comfort and so promoting happiness; saving waste; conserving limited visible stored fuel.

It has come to be universally admitted that mechanically ventilated buildings must have automatic heat control. Every residence needs automatic heat control because shutting off a radiator or a register, which a persecuted occupant may sometimes do (he generally opens a window) has little if any effect on the remote fire in the heater, and fuel used for overheating always is wasteful.

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