

other fuels but with a certain sum provided for heating, it is likely that the owner will choose the system that is best adapted to his requirements.

Structures of the ordinary constructions may be perfectly tight against the entrance of rain or snow but they may lose heat at a surprising rate and this results in a correspondingly high fuel bill. Cost of operation is the most important factor in the home owners mind. The distribution of cold weather during the winter months is quite variable and sometimes the owner of a gas heating system is alarmed by what appear to be excessive bills for gas consumption. For example during the average winter in New York, generally will require 20 per cent of the total quantity of gas used for heating during the year while Galveston, Texas, will consume 34.3 per cent during the same month and Bismarck, N.D., will use 18.8 per cent during the same period.

To obtain economical operation of gas-fired heating plants, it is essential to have an appropriately proportioned installation to guard against over or under-heating, faulty thermostats and to have proper chimney proportions.

CHAPTER XIV

AUTOMATIC HEAT CONTROL

TEMPERATURE regulation is a vital function in the human body. Everyone carries about with him remarkably effective automatic heat control equipment. In the best functioning of many social and commercial services, automatic temperature regulation is proved to be necessary, not only to comfort and health, but also to the prevention of waste and to the perfection of manufacturing processes.

Temperature control is usually achieved by preventing over-heating. It follows that *automatic heat control* is a better term than automatic temperature regulation, and it is obvious that automatic heat control in itself must always effect economy.

Overheating is much more common than underheating, and the results of overheating are more harmful to health and efficiency.

All heating equipment must be sufficient in capacity to render acceptable service under the most arduous conditions. The most arduous conditions, especially as to extreme cold outside, are in effect only a small part of the heating season. It may surprise many people to realize that in Chicago, for instance, the most extreme cold prevails only on about six days per year.

During the balance of the heating season the heating apparatus must be operated at much less than full capacity—generally in colder climates at about 40 per cent of the maximum.

Hence there is ample ability and strong probability for overheating during the major part of each heating season unless automatic control of the heating apparatus is provided.

Ventilating systems without automatic heat control give trouble from drafts.

Rooms heated by radiators can be cooled more quickly by opening windows than by shutting radiator valves, so that it is found that great heat waste occurs through open windows and open radiator valves, unless automatic heat control is furnished.

Gas and oil heaters and similar devices using quickly responsive fuels become prohibitively expensive for fuel unless automatic heat control is used.

Service hot water heaters must have automatic heat control, not only for economy and satisfaction, but also to prevent scalding the bodies of users.

Automatic heat control is responsible for a goodly share in the increase in efficiency of modern manufacturing processes, especially in saving of