

RATING OF AIR WASHERS AND FILTERS

Air washers and filters are rated as follows:

- 1.—Capacity in cubic feet of air handled per minute.
- 2.—Resistance in inches of water which the washer or filter offers to the flow of air at its rated capacity.
- 3.—Percentage of dust removal at its rated capacity.
- 4.—Percentage of entrained moisture remaining in the air after passing through the washer while operated at its rated capacity.
- 5.—If considered as a humidifying agent, the humidifying efficiency, or the percentage of reduction in the initial wet bulb depression without external alteration of heating the circulating water.

CHAPTER XXIII

CONDITIONING AND COOLING AIR

THE temperature and humidity of the air that surrounds people has an important bearing on their comfort and general efficiency while in the industrial field hundreds of manufacturing operations are dependent for their success upon the atmospheric conditions maintained.

Geographical location has a bearing on climatic conditions and a study of temperature and humidity variations in different localities tends to show that the places having an average wet bulb temperature in the neighborhood of 56 deg. fahr. with corresponding dry bulb temperatures to give effective comfort temperatures of 63 to 71 deg. are favored with best health conditions.

Scientists have always been seeking a way to produce the same ideal conditions indoors that prevail outside at certain seasons of the year. Many studies have been made, numerous theories have been advanced and discarded. From the latest studies of human comfort (see Chapter XVIII) it has been concluded that there is a definite relation between a person's feelings and the degrees of heat, humidity and air motion.

Air conditioning as it is practiced today means to obtain predetermined effects upon material or persons within an enclosure by controlling the air purity, temperature, humidity, distribution and movement.

The development of effective devices for producing and maintaining the ideal atmospheric conditions desired, has made tremendous strides in the workroom and factory, school, theatre and hotel while but little effort has been made to reproduce these conditions in dwellings.

The manufacturer has adopted air conditioning as it has become an exact science with results measurable in dollars and cents, in a more perfect product, in increased production, in elimination of waste or in some equally important factor. Varying degrees of moisture are required in manufacturing processes and the nature of the product will indicate whether a high or low relative humidity is to be maintained. Heating as well as cooling must be considered in air conditioning work and textile mills, printing plants, bakeries, candy kitchens, laundries, etc., all present definite problems. For example, in spinning rooms 75 deg. fahr. and 65 per cent humidity have been found best for the operations; in match factories 68 deg. dry bulb and 55 deg. wet bulb permit continuous operation and reduce fire hazards; in candy dipping rooms 66 deg. dry bulb and 50 per cent relative humidity give a high quality product. In some cases humidity must be supplied; in others dehumidifying is necessary.

Air has certain definite properties and obeys certain well known laws, therefore to handle problems in air conditioning the relation between the wet and dry bulb temperature and the dewpoint should be thoroughly understood by the engineer. Briefly, the dewpoint is the temperature at which saturation is obtained for a given amount of water vapor. With