3 ● Approximately how low must the rates be to permit the use of electricity for heating purposes?

Probably the energy must sell for 2 cents or less per kwhr. At 2 cents the cost would be $5.86 per 1000 Mbh. (See Chapter 29 for comparison with other fuels.) This looks high, but the seasonal energy consumption would not be as large with electricity as with other fuels, for reasons stated in Question 1.

4 ● In fan heating systems, what is an important difference between a steam heated coil and an electrically heated coil?

A coil supplied with steam at constant pressure will remain at constant temperature regardless of the amount of air passing over it. The temperature of the electric coil supplied with a constant amount of energy will rise if the air quantity is decreased and fall if the air quantity is increased.

Chapter 40

AIR CONDITIONING FOR INDUSTRIAL PROCESSES

Moisture Content and Regain, Typical Industries Requiring Air Conditioning, Classification of Problems, Control of Regain, Control of Rate of Chemical Reaction, Control of Rate of Biochemical Reaction, Control of Rate of Crystallization, Conditioning and Drying, Atmospheric Conditions Required, General Requirements, Air Conditioning of Libraries, Greenhouse Heating

IN the manufacture or processing of hygroscopic materials such as textiles, paper, wood, leather, tobacco and foodstuffs the temperature and relative humidity of the air have a marked influence upon the rate of production and upon the weight, strength, appearance and general quality of the product. This influence is due to the fact that most materials of vegetable or animal origin, and to a lesser extent minerals in certain forms, take moisture from or give it up to the surrounding air.

In industries where the physical properties of the product affect value, the question of moisture is of special importance. With increase in moisture content, hygroscopic materials ordinarily become softer and more pliable. Standards of regain are firmly fixed in trade with fair penalties for excesses. Deficiencies result in loss of revenue to seller and loss of desirable quality to buyer.

Manufacturing economy therefore requires that the moisture content be maintained at a percentage favorable to rapid and satisfactory manipulation and to a minimum loss of material through breakage. A uniform condition is desirable in order that high speed machinery may be adjusted permanently for the desired production with a minimum loss from delays, wastage of raw material and defective product.

In the processing of hygroscopic materials, it is usually necessary to secure a final moisture content suitable for the goods as shipped. Where the goods are sold by weight, it is proper that they contain a normal or standard moisture content.

MOISTURE CONTENT AND REGAIN

The terms *moisture content* and *regain* refer to the amount of moisture in hygroscopic materials. *Moisture content* is the more general term and refers either to free moisture (as in a sponge) or to hygroscopic moisture (which varies with atmospheric conditions). It is usually expressed as a