

purpose of controlling its physical characteristics comes under this classification.

Who has not seen, or at least heard, of the steam filled rooms in drying establishments, paper and textile mills, whose atmosphere is cleared by the introduction of volumes of air pretreated to dissolve the clouds of free vapor. Such effects cannot be produced economically and surely by rule of thumb methods.

It is true that such a broad field claimed for air conditioning may be the subject of criticism from general heating and ventilating engineers, those to whom custom has given jurisdiction over steamfitting and plumbing as well as the ventilation, as such, of dwellings, schools and theaters. It would seem, however, that engineers whose lives are devoted to the discovery and application, scientifically, of the basic principles of psychrometry, whose elaborate and skillfully trained organizations of specialists have no other reason for existing than the design and building of apparatus assemblies for clothing in material form the results of their accurate calculations, and whose whole wide experience makes possible the only logical basis for selling—the guaranteeing of results, unquestionably should be the ones to include in their field any types of air systems which include air treatments as defined heretofore. No vapor absorption or drying installation, no evaporative cooling or water spray air cleansing system, can be dignified as an air engineering problem until the same meticulous care and attention to detail are devoted to them, as to what has heretofore been considered true air conditioning.

Now, having set forth the bill of particulars establishing air conditioning as a science embracing a great field, it might be interesting to make a rapid survey of some of the high spots which may act as beacons to those whose interest in the subject is not wholly academic.

AIR CONDITIONING IN TEXTILE INDUSTRY

Strange to say, that industry which today is, as a whole, the most enthusiastic subscriber to the benefits which air conditioning offers, was the first to realize them and to take steps to secure, crudely, it is true, at the time, all the good that climate could offer. The textile industry, founded and carefully developed in the most consistently damp and even temperatured parts of the British Isles, prospered and became famous to a great extent because of the uniformity of quality of product. This high quality and its practically unvarying standard was to no small extent due to climatic conditions, as they influenced the moisture regain of the material in process. Even there, however, at some seasons the natural moisture was not sufficient or the natural temperature too high. Quickly the manufacturers seized upon and put into effect weird and wonderful schemes, from drenching floors to steam jets and water pans, with which to let them muddle through. The American manufacturer, however, far more progressive, is not tied down to locality in order to secure an approximately ideal and equable climate; other and now more important considerations may be made paramount, and the desired product of uniform standard every day is secured by air conditioning. It may, today, be stated almost as an axiom that the modern progressive

textile mill in this country would about as soon leave off its roof as to omit its air conditioning equipment.

Humidifying as a study necessarily was developed first, as the textile field offered the most fertile and profitable ground for this work; subsequently followed such other industries as that of printing and lithographing, where constant regain meant constant paper stretch and perfect registering of multicolor impressions. Consider how the addition and regulation of moisture in air has affected the manufacturer of macaroni, the oxidation of paint and varnish coats in the automobile, furniture and piano industries, the perfecting of the bread we eat and the milling of the flour from which it is made, the enamelware field, and the innumerable scientific drying processes for handling materials from garbage to bricks. All of these and many more have their individual problem,



FIG. 65. CHOCOLATE DIPPING ROOM OF MIDDLE WESTERN CANDY FACTORY

thought unsolvable until the adaptation of manufactured weather proved science again able to do the impossible.

Sometimes the summer weather or its equivalent in the factory is the stumbling block—high temperatures, high humidities, excessive regains. However, if weather is at fault, then in its controlled state it can be made to undo its harmful work. So developed dehumidifying: the abstraction of excess moisture from air, fitting it to reduce the moisture contents of material, when put to work at moderate temperatures. In other words, reducing the moisture contents of the air so far that its vapor pressure would be lower than that of the material exposed to it, even though the temperature of that material were lower than the ordinary seasonal temperature. Take hard candy, for instance. This cooked sugar, in an amorphous state, cooling in the usual summer weather, absorbs water just like any other material; given enough time, the clear, hard, compact mass forms a solid solution with the absorbed water, and the sugar slowly but surely crystallizes out as it was before the cooking. Cool the same