necessary to add a correction term $\bar{h}$ as follows,

$$\bar{h} = \frac{\mu(1 - \mu)B}{1 + aW_s\,\mu} \tag{5a}$$

In Table 3 are listed values of the coefficient B and maximum values of the correction term $\bar{h}$, the latter occurring at the same values of μ as do those of the correction term $\bar{v}$.

Unfortunately, values of the entropy s of moist air per pound of dry air computed from the simple relation,

$$s = s_a + \mu s_{as} \tag{6}$$

do not approximate the true values as closely as might be desired except at temperatures considerably lower than 150 F. Only a relatively small portion of the error is contributed by the correction term

$$\bar{s} = \frac{\mu(1 - \mu)C}{1 + aW_s\,\mu} \tag{6a}$$

Table 3 lists values of the coefficient C and maximum values of the correction term $\bar{s}$, the latter occurring at the same values of μ as do those of the correction terms $\bar{v}$ and $\bar{h}$. The larger portion of the error is contributed by the so-called *mixing entropy*. It can be expressed as an additional correction term $\bar{s}$ as follows,

$$\bar{s} = 0.1579\,[(1 + \mu aW_s)\log_{10}(1 + \mu aW_s) - \mu aW_s \log_{10}(\mu) - \mu(1 + aW_s)\log_{10}(1 + aW_s)]. \tag{6b}$$

Maximum values of $\bar{s}$ and the values of μ at which they occur are given in Table 3. In Equation 6b $\log_{10}$ denotes logarithm to the base 10.

MOLLIER DIAGRAM

It is a fundamental proposition of thermodynamics that *when a fluid flows across a section fixed in space it convects with it an amount of energy equal to its enthalpy as determined by the pressure, temperature, and composition of the fluid at that section.* This fundamental proposition provides the correct procedure for applying the law of conservation of energy to the processes occurring most frequently in air conditioning practice. Thus if moist air is flowing through a duct it carries across any section of the duct energy of amount mh Btu per minute and water of amount mW pounds per minute, if m denotes the weight of dry air crossing the section per minute.

The above considerations suggest the importance of having accurate knowledge regarding the enthalpy of the fluid in question and the desirability of using enthalpy as one of the coordinates in graphical representation. The use of enthalpy h and humidity ratio W as coordinates in the case of moist air is due to Mollier [4]. A convenient modification of the Mollier diagram introduced by Goff is obtained by taking humidity ratio W as ordinate and reduced enthalpy (h-1000W) as abscissa. A Mollier Diagram modified in this way is enclosed in the envelope attached to the inside back cover and an abridgement of the Diagram is shown in Fig. 1.

The Mollier Diagram is a constant-pressure chart, the one provided with this book being drawn for standard atmospheric pressure from the data in Table 1. Along the axis of abscissae ($W = 0$, $\mu = 0$) are plotted

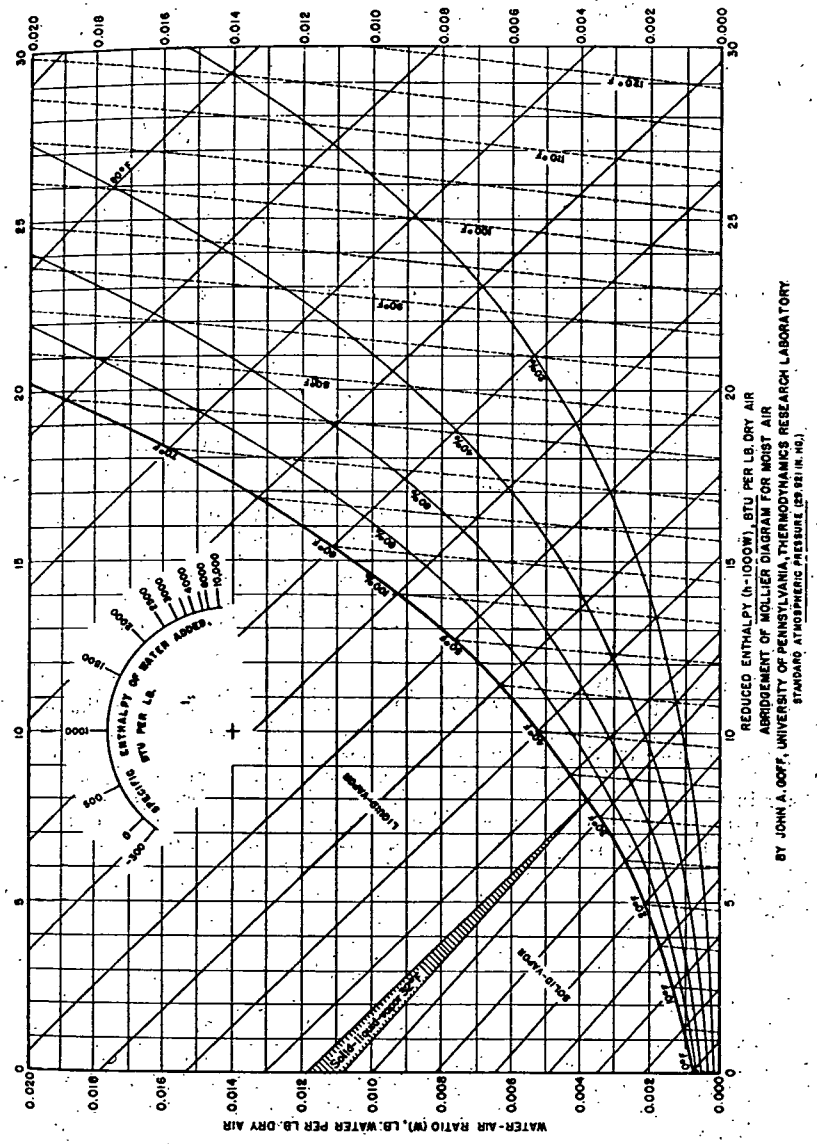


FIG. 1. ABRIDGEMENT OF MOLLIER DIAGRAM FOR MOIST AIR