HOW TO USE THE COMFORT CHART

In the Psychrometric Chart, dry bulb temperature is plotted as abscissae and grains of moisture per pound of dry air as ordinates. The maximum moisture which the air can hold at any temperature gives the saturation or 100 per cent relative humidity curve. Relative humidities between 0 and 100 per cent are given by a series of curved lines similar to the saturation curve. The wet bulb temperatures for all atmospheric conditions are given by a series of nearly parallel oblique lines. Effective temperature is given by a series of oblique but not parallel lines which approach being parallel to the wet bulb lines at high temperatures and humidities, and dry bulb lines at low temperatures. The numerical value of the wet and effective temperature lines is given by the dry bulb temperature of their intersection with the saturation curve.

Dry bulb temperature is the true temperature of the air as determined by an ordinary thermometer. It does not, however, accurately indicate a person's feeling of warmth. If the humidity is high a person will feel warmer at the same dry bulb temperature than he will if the humidity is low.

Wet bulb temperature is not the temperature of the air but that which a thoroughly wet body will attain if the air passes over it for a sufficient length of time and with a high enough velocity. A person is not thoroughly wet and hence does not react entirely in accordance with the wet bulb temperature. At high temperatures when the body is wet with perspiration, it reacts more nearly to wet bulb temperature while at low temperatures the body is comparatively dry and reacts more nearly in accordance with the dry bulb temperature.

Effective temperature is an experimentally determined scale which unlike the dry bulb and wet bulb scales is a true measure of index of a person's feeling of warmth in all combinations of temperature and humidity. In other words with any given effective temperature a person will always feel the same degree of warmth or coldness regardless of the dry bulb or wet bulb temperature.

That range of effective temperatures over which 50 per cent of people feel comfortable, namely 62 deg. effective temperature to 69 deg. effective temperature, is called the Comfort Zone.

That particular effective temperature at which a maximum number of people feel comfortable is 64 deg. effective temperature and is called the comfort line. While at rest in still air, 97 per cent of all people are comfortable at this temperature.

Tables 93 to 99 give the relation between dry and wet bulb temperatures, and effective temperature for still air, and various air velocities up to 700 ft. per min.

Example 1.—Given dry bulb and wet bulb temperatures of 75 and 68 deg. First: what is the effective temperature? Second: is this condition warmer or cooler than 80 deg. dry bulb and 63 deg. wet bulb?

Answer.—The first condition is given by the intersection of the 75 deg. dry bulb line and the 68 deg. wet bulb line. The effective temperature is given by the numerical value of the effective temperature line, passing through this point and indicated by the scale along the saturation curve, and is 71.1 deg. effective temperature. The second condition is given by the intersection of 80 deg. dry bulb and 63 deg. wet bulb and is