

Definition of Effective Temperature

Briefly, *effective temperature* may be defined as an arbitrary index of the degree of warmth or cold felt by the human body in response to temperature, humidity, and movement of the air. Effective temperature is not a true temperature of the air but an index which combines temperature, humidity and air motion in a single value. The numerical value of the

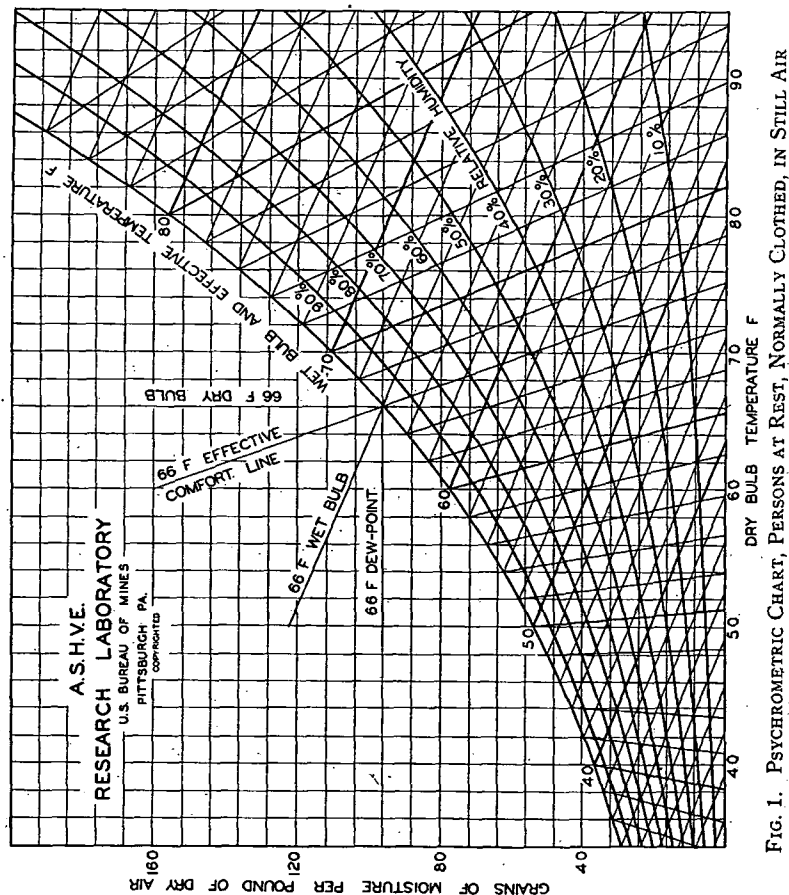


FIG. 1. PSYCHROMETRIC CHART, PERSONS AT REST, NORMALLY CLOTHED, IN STILL AIR

effective temperature index for any given air condition is fixed by the temperature of saturated air which, at a velocity or turbulence of 15 to 25 fpm, induces a sensation of warmth or cold like that of the given condition. Thus, any air condition has an effective temperature of 65 deg when it induces a sensation of warmth like that experienced in practically still air at 65 F saturated with moisture.

In all reports of the A.S.H.V.E. Research Laboratory, the term *still air*

signifies the minimum air movement it was possible to obtain in the Laboratory's psychrometric chamber. Actually, the air motion was between 15 and 25 fpm in all experiments, without qualification, as measured by the Kata thermometer. This was not a linear movement of air but it represented the turbulence or eddy currents produced by the air

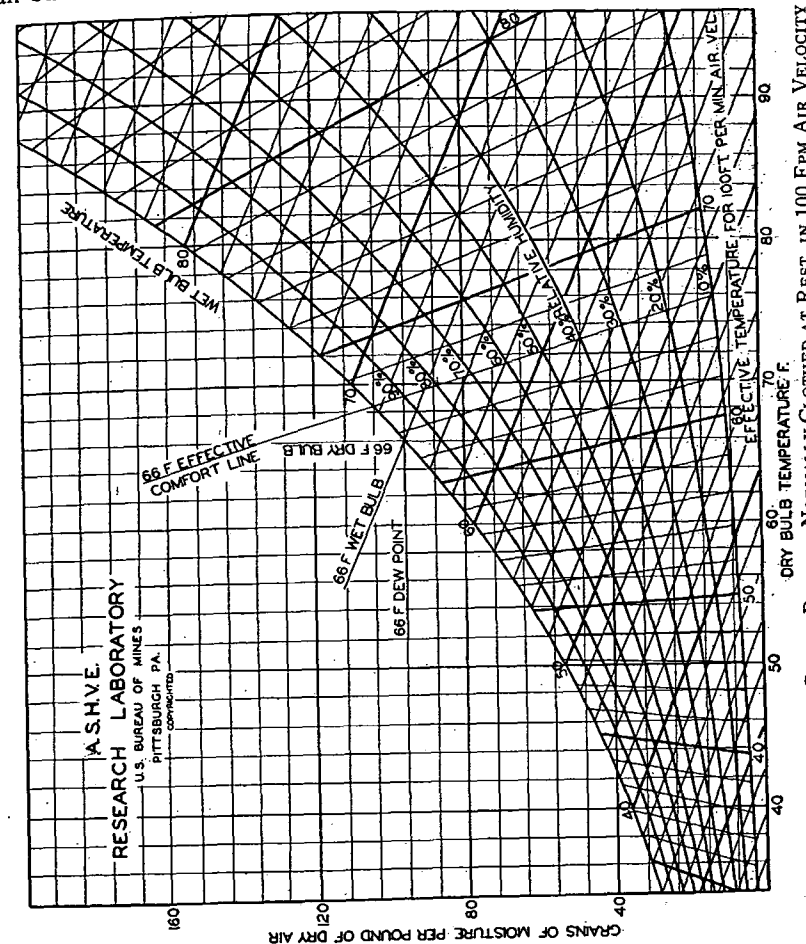


FIG. 2. PSYCHROMETRIC CHART, PERSONS NORMALLY CLOTHED AT REST, IN 100 FPM AIR VELOCITY

change. Even in tightly sealed rooms, the natural air movement is not likely to fall below 10 fpm so long as there is a temperature or pressure difference between the air inside and that outside the room.

The relation of temperature and humidity to comfort for persons normally clothed and at rest in still air is given in Fig. 1, while the effect of various air motions upon comfort for persons normally clothed at rest for velocities of 100 and 300 fpm are given in Figs. 2 and 3. The difference