

VENTILATING ENGINEERS in order to locate these comfort lines on the psychrometric chart. Complete reports of these studies for both still and moving air are reported in the Society's TRANSACTIONS, Vols. 27-34 inclusive.

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 air motion upon comfort for persons normally clothed is given in Figs. 2, 3 and 4. These charts are primarily for winter-time conditions in relatively cold climates. The conditions of indoor comfort corresponding to summer-time conditions or to conditions in the warmer climates are somewhat different. For data pertaining to this subject, see Inside Temperatures, Chapter 5, p. 83.

EFFECTIVE TEMPERATURE

Effective temperature is an experimentally determined scale which unlike the dry-bulb and wet-bulb scales is a true measure or index of a person's feeling of warmth in all combinations of temperature, humidity, and air motion. In other words, for any one given effective temperature a person will feel the same degree of warmth or coldness regardless of the dry-bulb temperature, wet-bulb temperature and velocity of the air required to produce that particular effective temperature.

The psychrometric charts for moving air (Figs. 2, 3 and 4), differ from the chart for still air (Fig. 1) only in that the effective temperature lines for any particular degree do not intersect the dry-bulb, wet-bulb or dew-point temperature lines at the same degree on the saturation or 100 per cent relative humidity curve, but are removed to the right so that the effective temperature for any dry and wet-bulb temperature is lower for moving air than it is for still air. This difference between the effective temperature for still air and for moving air, of any velocity, is the cooling resulting from that velocity. The difference between the dry or wet-bulb temperature and the effective temperature at saturation also gives the cooling produced by the velocity for that condition.

Fig. 5 gives the effective temperature lines for still air and for three velocities ranging from 150 to 500 ft. per minute on the same chart. It is of value in giving at a glance the relative cooling effect of different velocities.

THE COMFORT LINE AND THE COMFORT ZONE

That range of effective temperatures over which 50 per cent of people feel comfortable, namely 62 to 69 deg. fahr. is called the *comfort zone*.

That particular effective temperature at which a maximum number of people feel comfortable is called the *comfort line*. While at rest, 97 per cent of people were found to be comfortable at 64 deg. and this temperature was accepted as the comfort line. These tests were made in 1923, when the weight of clothing worn may have been greater. There is some indication that because of lighter clothing worn today, the effective temperature should be raised to 66 deg. (A new investigation of this temperature is contemplated by the A.S.H.V.E. Research Laboratory). Persons working at various rates are most comfortable at effective temperatures below 64 deg. The effective temperatures giving maximum comfort for persons

working has been determined by the Research Laboratory for a rate of work which is considered hard labor. For this degree of work, 50 per cent

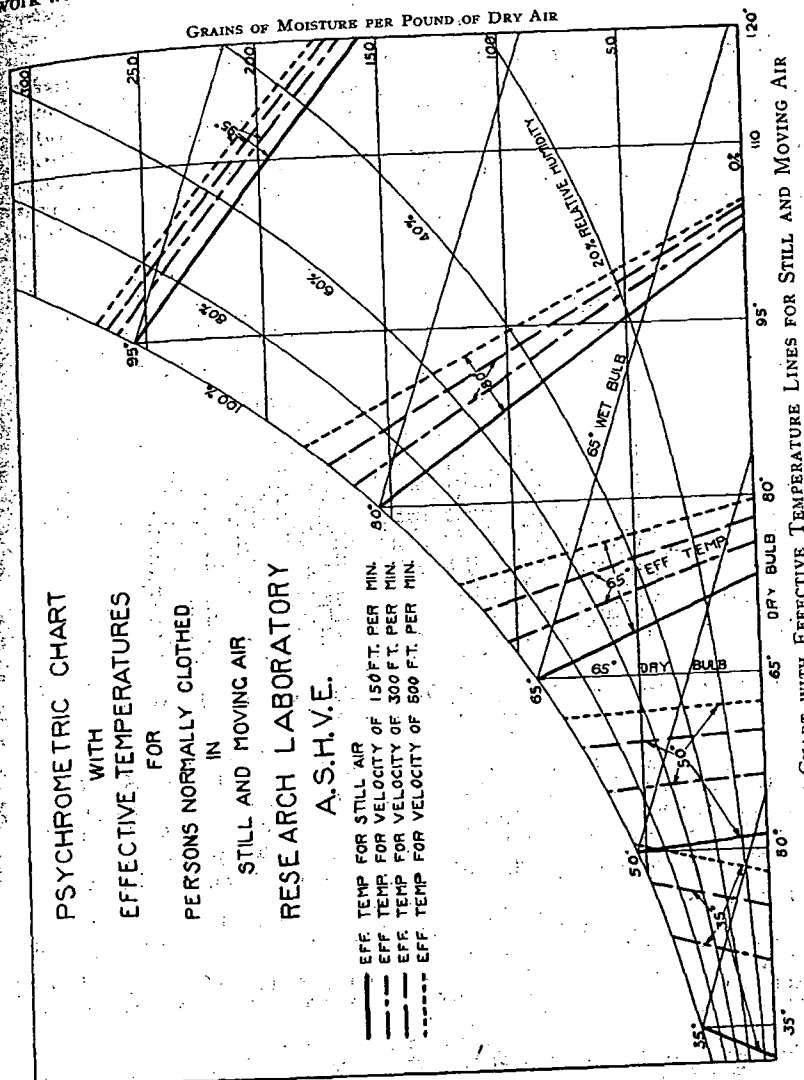


FIG. 5.

were fairly comfortable for temperatures ranging from 46 to 64 deg., while the greatest percentage found maximum comfort at an effective temperature of 53 deg.

The data given in the charts, Figs. 1 to 5, are for persons normally