curves make it possible to apply the data to persons engaged in any type of work or physical activity, providing the resulting metabolic rate is known. As an example, if it is found that a certain type of work results in a metabolic rate of approximately 760 Btu per hour for an average person working in an atmosphere of 70 ET, then his total rate of heat dissipation to atmospheres of various temperatures will be approximately as given by the broken-line curve in Fig. 2. The broken line curves in Figs. 3 and 4 give the rate of sensible and latent heat dissipation of the person for different dry-bulb temperatures.

ACCLIMATIZATION

Acclimatization and the factor of psychology are two important influences in air conditioning which cannot be ignored. The first is man's ability to adapt himself to changes in air conditions; the second is an intangible matter of habit and suggestion.

Some persons regard the unnecessary endurance of cold as a virtue.

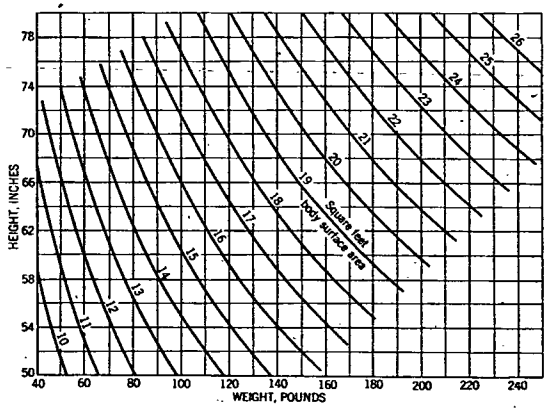

FIG. 5. CHART FOR DETERMINING SURFACE AREA OF INDIVIDUALS FOR HEIGHT AND WEIGHT GIVEN

They believe that the human organism can adapt itself to a wide range of air conditions with no apparent discomfort or injury to health. In the light of present knowledge of air conditioning these views are not justified. Acclimatization to extreme conditions involves a strain upon the heat regulating system and interferes with the normal physiologic functions of the human body. Thousands of years in the heat of Africa do not seem to have acclimatized the Negro to a temperature exceeding 80 F. The same holds true of northern races with respect to cold, although the effects are mitigated by artificial control. An environment averaging 64 F for the 24-hour period has been indicated as associated with minimal mortality[28].

Within limits, however, there does occur a definite adaptation to external temperature level. People and animals raised under conditions of tropical moist heat stand chilling poorly as they are unable quickly to increase internal combustion to keep up the body temperature. For this

[28]Civilization and Climate, by Ellsworth Huntington, Yale University Press, 1928.

reason they have trouble standing the cold, stormy weather of the temperate zones, and when exposed to it are very susceptible to respiratory infections. Likewise, people living in cool climates suffer greatly in the moist heat of the tropics until their adaptive mechanism has been adjusted.

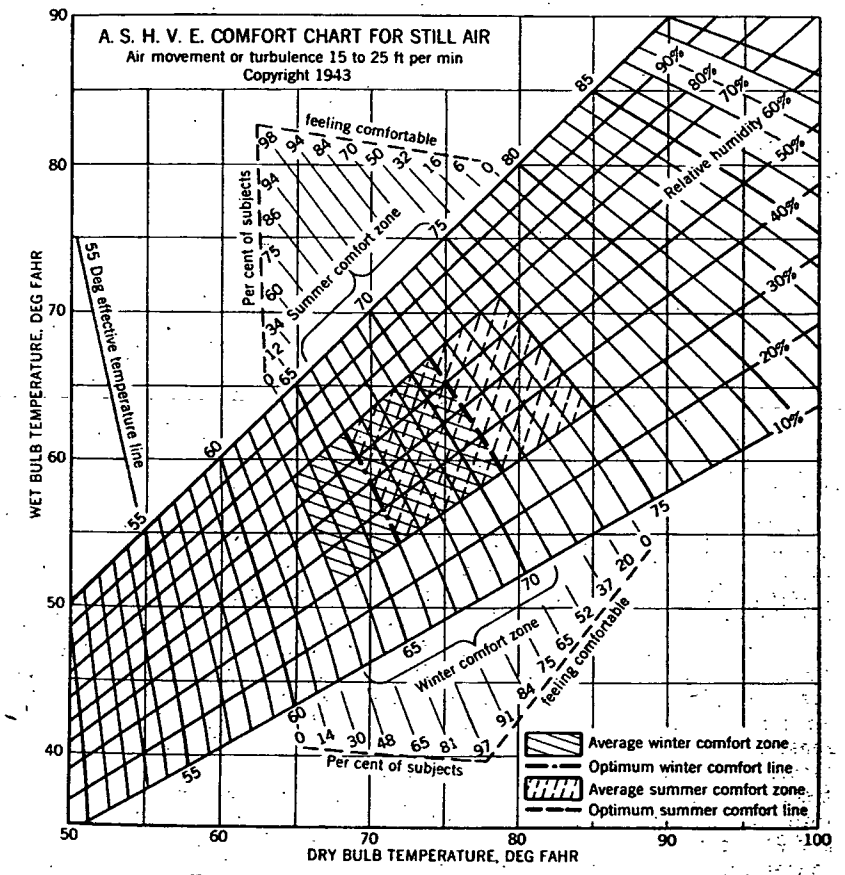

FIG. 6. A.S.H.V.E. COMFORT CHART FOR STILL AIR

Note.—Both summer and winter comfort zones apply to inhabitants of the United States only. Application of winter comfort line is further limited to rooms heated by central station systems of the convection type. The line does not apply to rooms heated by radiant methods. Application of summer comfort line is limited to homes, offices and the like, where the occupants become fully adapted to the artificial air conditions. The line does not apply to theaters, department stores, and the like where the exposure is less than 3 hours. The optimum summer comfort line shown pertains to Pittsburgh and to other cities in the northern portion of the United States and Southern Canada, and at elevations not in excess of 1000 ft above sea level. An increase of one deg ET should be made approximately per 5 deg reduction in north latitude.

Within a few years, however, they find themselves reacting as natives to the new environment.

The adaptive level changes somewhat with the season[29]. There are also marked differences between the sexes. In the cold zone the thickness of

[29]The Reactions of the Clothed Human Body to Variations in Atmospheric Humidity, by C.-E. A. Winslow, L. P. Herrington and A. P. Gagge (*American Journal of Physiology*, Vol. 124, December, 1938, p. 692).