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CHAPTER 7

AIR CONDITIONING IN THE PREVENTION AND TREATMENT OF DISEASE

Sanitary Ventilation, Control of Airborne Infection, Value of Air Cooling Under Tropical Conditions, Treatment of Disease, Operating Rooms, Nurseries for Premature Infants, Fever Therapy, Cold Therapy, Allergic Disorders, Oxygen Therapy, General Hospital Air Conditioning

THE Second World War caused an increase of interest in the preventive aspects of air conditioning. It re-emphasized the importance of the control of airborne infection and demonstrated the value of air cooling under tropical conditions for the prevention of heat rash, for promoting proper rest and sleep, and in the convalescence of patients.

The problem of air conditioning or air purification in shelters, hospitals, or any buildings, following an atomic explosion has the attention of engineers, military personnel, public health authorities, private physicians, and the general public. The type and structure of shelters are important. In strategic areas likely to be bombed, they should be windowless, underground, strong enough to resist blast and have sufficient cover to protect against initial radiation. Suitable ventilation is a necessity, and could be provided by the use of pressurized installation in which any air taken from the outside is forced through a ventilator. Air conditioning and heating or cooling systems could then be kept in continuous operation for improving inside air conditions and controlling room temperature. Heat transmission through the walls, carbon dioxide accumulation, and the total number of people using the shelter, are factors in determining the necessity for using outside air. Such a shelter should be closed to outside air during the period immediately following a blast.

A surface or subsurface atomic burst would result in wide dispersion of radio-active particles in high concentrations.[1] There is relatively little danger from such particles after a high atomic burst. Windows in ordinary buildings close to the blast would be broken, and consequently, air conditioning systems would provide no protection against this hazard. At a distance of 1200 ft from ground zero, many windows would not be broken; outside leakage would therefore be slight, and air conditioning systems could be used with advantage.

The *smog* incident in Donora, Pa., has focused the attention of health authorities and engineers on the problem of air contamination by toxic gases. The exact way in which such substances affect the human being is unknown.[2] There has been a great deal of speculation, but in reality there is little specific information concerning this problem. It is believed that in such cases the combination of contaminants, rather than any single substance, produces the toxic effects. It is known that low atmospheric pressure, with accumulation of toxic substances in increasingly higher concentration, produced the condition in Donora. The U. S. Public Health team, in their investigation, found that this same city had experienced several previous incidences of lesser severity during the preceding 30 years. This was shown by much higher mortality rates during certain periods. A high percentage of the population of this city suffered to some extent