

preclude the cooling of the entire building, but the needs of the average hospital can be met by the use of built-in room coolers and a few portable units which can be wheeled from ward to ward when needed.

In the North and certain sections of the Pacific Coast, cooling is needed but a few days during summer, while in the South, it can be used to advantage from May to October, and in tropical climates almost continuously throughout the year.

F. L. Grocott of the Anglo-Iranian Oil Co. states that in Iran, the medical staff after 10 years experience with air conditioning, demand a uniform environment of 75 F and 50 per cent relative humidity (70 ET) under all summer outside conditions for general wards and treatment rooms and 70 F with 30 to 50 per cent relative humidity (65-66 ET) for winter conditions. In the operating rooms, 70 F and 50 per cent relative humidity (66 ET) is demanded all the year 'round, although the annual external range is 40 F to 120 F. No ill effects have been noted in the medical personnel though they are exposed to changes from external to internal conditions many times daily. Temperature shock in either direction seems to create discomfort for a short interval but if the individual is in good health, no injury results²².

Aside from comfort and recuperative power of the patients, cooling is of great assistance in the treatment of fevers in the new-born and in post-operative cases, in enteric disorders, fevers, heat stroke, heart failure, thyroid crisis, and in a variety of other ailments which often accompany summer heat waves.

Problem of Odors

The evacuation of battle casualties in aircraft and their subsequent hospitalization have stimulated efforts to minimize odors arising from draining wounds, old odorous casts, and gangrenous wounds. For aircraft, chemical sprays and vapors, perfumes, oxidizing gases and ventilation methods are unsatisfactory. An ideal deodorant would purify the air by means of odor adsorption so that subsequently the air can be recirculated. Based upon the effectiveness of activated carbon commercially and industrially to adsorb odors, individual adsorption units have been used successfully. In hospital wards the question of superiority of adsorption methods for elimination of odors over other methods remains to be answered. The present status of the problem is that the commercial aspect is highly controversial.

REFERENCES

- ¹ Factors in the Control of the Spread of Acute Respiratory Infections with Reference to Streptococcal Illness and Acute Rheumatic Fever, by S. M. Wheeler and T. D. Jones (*American Journal of the Medical Sciences*, 209:58, 1945).
- ² Dust Control, Report on Suppressive Measures for the Control of Dust, to the Standard Methods Committee for the Examination of Germicides and Antibacterial Agents, by Clayton G. Loosli (*American Journal of Public Health*, Vol. 38, p. 409, March, 1948).
- ³ Laboratory and Field Studies of Glycols and Floor-Oiling in the Control of Air-Borne Bacteria, by A. P. Krueger et al (*U. S. Naval Medical Bulletin*, 42:1288, 1944).
- ⁴ Bacterial Content of Air in Army Barracks, by H. M. Lemon, H. Wise and M. Hamburger (*War Medicine*, 6:92, 1944).
- ⁵ A Study of the Nature and Control of Air-Borne Infection in Army Camps, by O. H. Robertson, M. Hamburger, C. G. Loosli, T. T. Puck, and H. M. Lemon (*Journal of the American Medical Association*, 126:993, 1944).

- ⁶ Lethal Effects of Triethylene Glycol Vapor on Air-Borne Bacteria and Influenza Virus, by O. H. Robertson et al (*Science* 97:142, 1943).
- ⁷ The Present Status of Glycol Vapors in Air Sterilization, by M. Hamburger, Jr., O. H. Robertson, and T. T. Puck (*American Journal of the Medical Sciences*, 209:162, 1945).
- ⁸ Summary of a 3-Year Study of the Clinical Applications of the Disinfection of Air by Glycol Vapors, by T. N. Harris and J. Stokes, Jr. (*American Journal of the Medical Sciences*, 209:152, 1945).
- ⁹ Triethylene Glycol Vapor Distribution for Air Sterilization, by Edward Bigg, B. H. Jennings, and F. C. W. Olson (ASHVE JOURNAL SECTION, *Heating, Piping and Air Conditioning*, May, 1947, p. 103).
- ¹⁰ Glycol Vapors for Disinfecting Purposes, Editorial, (*Journal of the American Medical Association*, 133:696, March 8, 1947).
- ¹¹ Ultra-Violet Light Control of Air-Borne Infections in a Naval Training Center, by S. M. Wheeler, H. S. Ingraham, A. Hollaender, N. D. Lill, J. Gershon-Cohen, and E. W. Brown (*American Journal of Public Health*, Vol. 35, p. 457, 1945).
- ¹² Recent Studies on Disinfection of Air in Military Establishments. (*American Journal of Public Health*, Vol. 37, p. 189, Feb. 1947.)
- ¹³ The Present Status of the Control of Airborne Infections. (*American Journal of Public Health*, Vol. 37, p. 13, Jan. 1947).
- ¹⁴ A Comparative Study of the Effect on Men of Continuous Versus Intermittent Exposure to a Tropical Environment, by N. Pace, M. B. Fisher, J. E. Birren, G. C. Pitts, W. A. White, Jr., W. V. Consolazio, and L. J. Pecora (Research Project X-205, Report No. 2, *Naval Medical Research Institute*, Bethesda, Md., May, 1945).
- ¹⁵ Environmental and Physiologic Studies Aboard an Air-Cooled Hospital Ship En Route from Norfolk, Virginia to Canal Zone (U. S. S. TRANQUILITY (AH-14), 6-13 June 1945), by A. R. Behnke (Research Project X-205, Report No. 4, *Naval Medical Research Institute*, Bethesda, Md., September, 1945).
- ¹⁶ Fundamentals of Anesthesia (American Medical Association Press, Chicago, Ill., 2nd Edition, 1944, p. 204).
- ¹⁷ The Hazard of Fire and Explosion in Anesthesia, by B. A. Green (*Anesthesiology* 2:144, 1941).
- ¹⁸ Control of Physical Hazards of Anesthesia, by R. M. Tobell and A. W. Friend (*Canadian Medical Association Journal*, 46:560, 1942).
- ¹⁹ A.S.H.V.E. RESEARCH REPORT No. 1111—Air Conditioning Requirements of an Operating Room and Recovery Ward, by F. C. Houghten and W. Leigh Cook, Jr. (A.S.H.V.E. TRANSACTIONS, Vol. 45, 1939, p. 161).
- ²⁰ Unpublished Naval Studies by A. R. Behnke and O. Schneider (1940).
- ²¹ Disinfection of Air by Air Conditioning Processes, by C. P. Yaglou and Ursula Wilson (*American Association for the Advancement of Science*, Publication No. 17, p. 129).
- ²² The Control of Cross-Contamination by the Use of Mechanical Barriers, by J. A. Reyniers. (*Aerobiology, American Association for the Advancement of Science, Symposium*, 17:254, 1942).
- ²³ The Premature Infant: A Study of the Effect of Atmospheric Conditions on Growth and on Development, by K. D. Blackfan, C. P. Yaglou and K. McKenzie (*American Journal Diseases of Children*, 46:1175, 1933).
- ²⁴ Observations on the Control of Respiratory Contagion in the Cradle, by I. Rosenstern (*Aerobiology, American Association for the Advancement of Science, Symposium*, 17:242, 1942).
- ²⁵ Physical Medicine, by F. H. Krusen (W. B. Saunders Co., Philadelphia and London, 1941).
- ²⁶ A.S.H.V.E. RESEARCH REPORT No. 1054—Fever Therapy Induced by Conditioned Air, by F. C. Houghten, M. B. Ferderber, and Carl Gutberlet (A.S.H.V.E. TRANSACTIONS, Vol. 43, 1937, p. 131). A.S.H.V.E. RESEARCH REPORT No. 1161—Fever Therapy Locally Induced by Conditioned Air, by M. B. Ferderber, F. C. Houghten and Carl Gutberlet (A.S.H.V.E. TRANSACTIONS, Vol. 46, 1940, p. 307).
- ²⁷ Refrigeration for Anesthesia and Therapy, by L. W. Crossman and S. K. Safford (*The Modern Hospital*, 64:86, 1945).
- ²⁸ The Effect of Low Relative Humidity and Constant Temperature on Pollen Asthma, by B. Z. Rappaport, T. Nelson, and W. H. Welker (*Journal of Allergy*, 6:111, 1935).