vary inversely with the humidity. In the old nurseries with natural humidity it averaged 12.4 per cent of the birth weight; in the conditioned nurseries it was 8.9 per cent with 25 to 49 per cent relative humidity, and 6.0 per cent with 50 to 75 per cent relative humidity. The number of days required to regain the birth weight was correspondingly maximum in the old nursery and minimum in the conditioned nurseries under high humidity.

Maximum gains in body weight occurred in the conditioned nurseries under high humidity (55 to 65 per cent) in infants weighing less than 5 lb. The gains were less under low humidity (25 to 50 per cent) in the same nurseries, and in the old nurseries prior to the installation of air conditioning apparatus.

The incidence and severity of digestive syndromes, with diarrhea, persistent vomiting, diminishing gain or loss of body weight, and other symptoms, were generally from two to three times as high under low than under high humidity.

Summarizing, the best chances for life in premature infants are created by maintaining a relative humidity of 65 per cent in the nursery and by providing a uniform environmental temperature just sufficiently high to keep the body temperature within normal limits. Medical and nursing care are, of course, factors of equal and sometimes of greater importance.

Air Conditioning Equipment

Most of the installations now in use are of the central system type providing for filtration, for humidification and heating in cold weather, and for cooling and dehumidification in hot weather. A high ventilation rate, between 15 and 25 air changes, is desirable to remove odors and maintain uniformity of temperatures in extremes of weather. Recirculation is not used extensively in these wards owing to odors and the possibility of infection.

Control of Air-Borne Infection

The protection of the premature and older infant against infection is of the utmost importance. It was found in one installation equipped with air conditioning, germicidal lights and mechanical barriers that air conditioning alone did not prevent the spread of respiratory cross-infections. Bactericidal ultra-violet light barriers and air conditioning or mechanical barriers and air conditioning were efficient[19]. A brief preliminary report on the effect of propylene glycol vapor in reducing acute respiratory infections in a children's ward, suggests that it may be effective[20].

FEVER THERAPY

Artificial production of fever in man is an imitation of nature's way of overcoming invading pathogenic organisms. The action may be direct and specific by destruction of the invading organism within the safe limit of human temperatures, or indirect in the case of heat resistant organisms, by general mobilization of the defensive mechanisms of the body, which retard or neutralize the activity of pathogenic bacteria and their toxins. A serious challenge to the theory on which fever therapy is based comes from the demonstration that hyperpyrexia causes a reduction in the titer of circulating antibodies in experimental animals[21].

[19]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).

[20]The Effect of Propylene Glycol Vapor on the Incidence of Respiratory Infections in a Convalescent Home for Children, by T. N. Harris and J. Stokes, Jr. (*American Journal of Medical Sciences* 204:430, 1942).

The limits of induced systemic fever are usually between 104 and 107 F (rectal), and the duration from 3 to 8 hours at a time. The total period of fever treatment varies with the type of the organism involved from a few hours to 50 or more.

The diseases which respond favorably to artificial fever therapy are gonorrhea and its complications (which include arthritis, pelvic infections in women, and involvement of the eye), syphilis, chorea, infectious arthritis (non-gonorrheal), encephalitis, and some forms of asthma. There are other conditions which show promise under this treatment; but the most striking results are seen in gonorrhea and syphilis, since the causative organisms can be destroyed at temperatures compatible with human life[22].

Equipment for Production of Fever

Various means have been tried for producing artificial fever, including injections of various crystalloid or colloid substances, bacterial products of typhoid and malarial organisms; a number of physical methods, such as hot baths, radiant heat, diathermy, radiothermy, and in the last few years, air conditioned chambers. The relative advantages and disadvantages of various methods have been discussed in a paper[23]. The results by the use of air conditioned cabinets have not been fully explored, and it is therefore difficult to determine all the advantages and disadvantages of the value of air conditioning at this time.

In the earlier studies of the Society[24], temperatures were elevated more easily using saturated atmospheres. A fever therapy apparatus[25] using these same principles has proved efficient as a means of inducing and maintaining fever in a body with small likelihood of burns because of the comparatively low dry-bulb temperatures. This saturation factor is in great use today where fever is created by induction currents by placing the body in an electrical field. When the optimum body temperature has been reached by electrical induction, the atmosphere of the enclosure is kept at saturation to prevent heat loss, thus maintaining the patient's temperature at the desired point. Other apparatus[26] which uses electric heaters, centrifugal fans, and a water container for humidification has been used in the past, but the more recent trend is toward saturation with a lower dry-bulb temperature.

When heat is necessary in treating legs or arms, such media as short or long wave diathermy, infra-red, water baths, etc. have been used extensively. A recent development, a saturated atmosphere heating unit, similar to one previously described[27] has proven satisfactory, because heat may be administered over longer periods which render deep heating possible without fear of burns or shocks[28]. Local heating has been

[21]The Influences of Artificial Fever on Mechanisms of Resistance, by H. V. Ellingson and P. F. Clark (*Journal of Immunology*, 43:65, 1942).

[22]Report of the First Year of Fever Therapy Research by the *Department of Industrial Hygiene, School of Medicine, University of Pittsburgh*, 1938.

[23]Fever Therapy by Physical Means, by Frank H. Krusen and E. C. Elkins (*Journal American Medical Association*, 112:1689, 1939).

[24]A.S.H.V.E. Research Report No. 654—Some Physiological Reactions of High Temperatures and Humidities, by W. J. McConnell and F. C. Houghten (A.S.H.V.E. Transactions, Vol. 29, 1923, p. 129).

[25]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).

[26]Artificial Fever Therapy of Syphilis, by W. M. Simpson (*Journal of the American Medical Association*, 105:2132, 1935).

[27]Loc. Cit. Note 24.

[28]Saturated Atmospheres in the Treatment of Injuries, by M. B. Ferderber (*Industrial Medicine*, 8:256, June, 1939).