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[13] 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[14] has proven satisfactory, because heat may be administered over longer periods which render deep heating possible without fear of burns or shocks[15]. Local heating has been somewhat satisfactory in relieving the painful symptoms of peripheral vascular disease.

The final criteria for the use of fever therapy may be changed because of the introduction of certain drugs which appear prominent in the experimental treatment of some diseases for which fever therapy has been efficacious.

COLD THERAPY

In contrast to fever therapy the use of cold as a means of treatment is being investigated. From the available literature[16] the chief virtues of cold therapy (cryotherapy) are the reduction of pain due to extensive cancer and the possibility that the process may be arrested. For a localized lesion, ice water between 36 to 48 F is circulated through tubing at the site of the disease for periods ranging from 4 to 48 hours. A later development was the principle of hibernation during which time the patient is kept in an air conditioned space with an environmental temperature between 50 to 60 F for five days. The body temperature is reduced below the critical level of 95 F to as low as 80 F. Most of the vital processes of life are at very low ebb and this period simulates the hibernation of the wild animals. Although relief of pain is reported it remains to be seen to what extent this form of treatment will be used.

HIGH TEMPERATURE HAZARDS

Heat disease is now classified as heat exhaustion, heat cramps, and heat stroke[17]. The last was formerly thought to be the result of high temperatures, but in the light of present knowledge is considered a neurologic defect. This inability to control temperature is most frequently seen in diseases of the nervous system, and heat stroke, therefore, is not so much a result of environmental temperatures as it is some intrinsic defect in the mechanism itself. The hazards of high temperatures are

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

[14]Loc. Cit. Note 11.

[15]Saturated Atmospheres in the Treatment of Injuries, by M. B. Ferderber (*Industrial Medicine*, 8: 256-259, June, 1939).

[16]Temperature Factors in Cancer and Embryonal Cell Growth, by L. W. Smith, and Temple Fay (*Journal American Medical Association*, Vol. 113: 653-660, August, 1939).

[17]Heat Disease: Clinical and Laboratory Studies, by M. W. Heilman and E. S. Montgomery (*Journal of Industrial Hygiene and Toxicology*, 18: 651-666, November, 1936).

not easily understood. It is difficult to say whether a repeated rise of 1 or 2 deg of body temperature is dangerous or whether short exposures at high temperatures are more harmful than longer exposures at lower temperatures. A new concept is evident in finding an increase in leucocytes (white cells) of the blood in workers subjected to high temperatures. These leucocytes are defensive factors which are increased when infection invades a body. A rise in temperature and leucocyte count indicates body defense in the presence of disease. Since a recent study[18] showed that both temperature and cell count were increased, the question arises whether long exposures to very high temperatures might not cause exhaustion of these defense mechanisms.

ALLERGIC DISORDERS

Although there is some division of opinion over the ultimate cause of allergy, the prevailing belief is that it is due to an inherited or acquired hypersensitiveness to pollen or other foreign proteins in certain individuals who react abnormally to the offending substance. The reaction may be induced by inhalation, eating, or absorption (through the skin) of the allergens. Some of the clinical manifestations are hay fever, asthma, eczema, and contact dermatitis.

Symptoms of Hay Fever and Asthma

The respiratory tract is the site of probably the most usual allergic manifestations, the so-called hay fevers and asthma. In hay fevers, the nose and eyes are red and itchy, and there is considerable discharge. Nasal obstruction is the most common and most distressing symptom. The severity of the symptoms varies widely from day to day depending chiefly on the amount of pollen in the air.

Seasonal asthma comes in attacks. The most popular theory concerning the mechanism of action is that the offending substance irritates the nerve endings in mucous membranes of the respiratory tract, causing spasmodic contraction of the small bronchioles of the lungs, which interferes with breathing, particularly with expiration. Non-seasonal allergic disturbances are sometimes attributed to house or street dusts, fungi, odors, animal dander, irritating gases, and heat or cold, particularly sudden temperature changes. It is often stated in the literature that heat regulation in asthmatic individuals is likely unstable, with a tendency toward the subnormal. Many allergic cases who are apparently well, develop their attacks when cold weather appears, or upon changing from warm to cool outdoor air.

Air Conditioning Apparatus

In recent years considerable effort has been directed toward the elimination of the principal cause of allergy from the air of enclosures by filtration or other air conditioning processes capable of removing pollens, in the hope of providing relief to individuals who fail to respond to medical treatment (desensitization or immunization).

Paper or cloth filters, mounted in inexpensive window or floor units, prove quite satisfactory, but since dust and smoke frequently cause

[18]A.S.H.V.E. Research Report No. 1106—Air Conditioning in Industry, by W. L. Fleisher, A. E. Stacey, Jr., F. C. Houghten and M. B. Ferderber (A.S.H.V.E. Transactions, Vol. 45, 1939, p. 59).