Extensive research is now in progress to determine the usefulness and limitations of fever therapy on a wide variety of pathogenic conditions. While this form of therapy is rapidly gaining wide recognition, its application, according to the *American Medical Association*, should be strictly a hospital procedure surrounded with the safeguards commonly employed in a major operation and under the direction of skilled physicians.

CONTROL OF 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 foreign or pollen proteins in certain individuals who react abnormally to the offending substance. The reaction may be induced by inhalation, eating, or absorption of the allergens through the skin. The clinical manifestations are hay fever, asthma, eczema, hives, contact dermatitis, etc.

Symptoms of Hay Fever and Asthma

The respiratory tract is probably the most usual site of 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 and 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 to be unstable, with a tendency to subnormal body temperature. 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 failed to respond to medical treatment (desensitization or immunization).

Paper or cloth filters, mounted in inexpensive window or floor units, proved quite satisfactory in removing all but traces of pollen. Allergens may also be removed by passing the air through a water spray, or over cooling coils kept at a temperature low enough to cause condensation of atmospheric moisture on the surface of the coils.

Although the chief remedial factor in the treatment by conditioned air is the filtration of pollen, a certain amount of cooling and dehumidification

appears to be desirable. A comfortable temperature between 75 and 82 F in warm weather and a relative humidity well below 50 per cent proved satisfactory.[13] Direct drafts, overcooling or overheating are apt to initiate or aggrevate the symptoms.

Limitations of Air Conditioning Methods

The results obtained with air filtration or other air conditioning processes in the control of allergic conditions are fairly comparable to those obtained by desensitization treatment so long as the patients remain in the pollen free atmosphere. But while specific desensitization is preventive and in a few instances curative for all practical purposes, filtration gives only temporary relief. With rare exceptions, the symptoms recur on exposure to pollen laden air. Moreover the usefulness of air conditioning methods is limited because all cases are not caused by air-borne substances. Cases of bacterial asthma do not respond at all to the treatment with filtered air.

Despite these limitations air conditioning methods possess definite advantages in the simplicity of treatment, convenience, and under certain conditions almost immediate relief. Hay fever cases are usually relieved of most of their symptoms within an hour or so after exposure to properly filtered air. In pollen asthma cases relief comes more slowly, usually after an exposure of from 1 to 12 days depending upon the severity of asthma.

A pollen free atmosphere is especially valuable for patients in whom desensitization has given little or no relief, and in instances in which desensitization is not advisable owing to intercurrent illness. On the whole, conditioning methods are considered to be a valuable adjunct in medical diagnosis and treatment of allergic disorders.

AIR CONDITIONING IN OXYGEN THERAPY

Oxygen therapy is the principal measure employed for preventing and relieving the distressing symptoms of anoxemia, which is a deficiency in the oxygen content of the blood. Some of the more important conditions in which oxygen treatment is believed to be beneficial are pneumonias, anemia, heart affections, post-operative pulmonary disturbances, certain mental disturbances, asphyxia, asthma and atelectasis in new-born infants.

The necessity of air conditioning in oxygen therapy arises from the fact that oxygen is too expensive a gas to waste in the ventilation of oxygen tents and oxygen chambers. The oxygen rich atmosphere in these enclosures is therefore reconditioned in a closed circuit by removal of excess heat, moisture, and carbon dioxide given off from the occupants.

Oxygen Tents: In oxygen tents the air enriched with oxygen is usually circulated by means of a small motor blower which sends the air over soda lime to remove carbon dioxide and then over ice to remove excess heat and moisture. The concentration of oxygen in the tent is regulated by means of a pressure reducing valve and flow meter. In an inadequately

[13]The Effect of Low Relative Humidity at Constant Temperature on Pollen Asthma, by B. Z. Rappaport, T. Nelson and W. H. Welker (*Journal Allergy*, 6:111, 1935).