48 (980)

The action of certain atmospheric conditions on body temperature and the vascular system.

By FREDERIC S. LEE, D. J. EDWARDS and others.

[*From the New York State Commission on Ventilation.*]

The present research represents a part of an extended investigation, conducted by the New York State Commission on Ventilation, of the physiological action of various atmospheric conditions, especially temperature, humidity, carbon dioxide, and movement of air. Healthy human beings have been confined for periods ranging from 4 to 7 hours in a temperature the air of which can be readily controlled in respect to the desired conditions. A considerable variety of physiological phenomena have been studied and the results will be reported from time to time.

The body temperature of the subjects before entering the chamber was found to be dependent upon the average temperature of the outside air of the previous night, falling and rising as the temperature of the external air rose and fell. The temperature of the chamber itself also influenced the bodily temperature, the latter falling in an atmosphere of 20° C. and 50 per cent. relative humidity, rising in one of 30° C. and 80 per cent. relative humidity, and remaining nearly stationary in air of 23.9° C. and 50 per cent. relative humidity. This is shown in the following record of the results observed in the third series of experiments, 19 to 25 observations for each set of atmospheric conditions, the subjects being confined in the chamber for 7 hours.

Period of Confinement.	20° C. 50 Per Cent. Humidity.	23.9° C. 50 Per Cent. Humidity.	30° C. 80 Per Cent. Humidity.	30° C. 80 Per Cent. Humidity, with Fan Movement.
8.30 A.M.	37.12° C.	36.83° C.	36.86° C.	36.98° C.
3.30 P.M.	36.52° C.	37.02° C.	37.28° C.	37.37° C.

The final average bodily temperatures of all observations to date are as follows:

20° C. 50 Per Cent. Humidity.	23.9° C. 50 Per Cent. Humidity.	30° C. 80 Per Cent. Humidity.
36.73° C.	36.99° C.	37.41° C.

Effects of atmospheric conditions on the circulatory system are best seen when the observed results are viewed in the light of either the Crampton or the Barach indices. The Crampton index is expressed in terms of percentage, which is determined by the increase in the rate of the heart beat and the rise or fall of the systolic blood pressure when the subject passes from a reclining to an erect posture. A high percentage signifies a slight increase in the heart rate and a considerable increase in blood pressure; a low percentage, a marked increase in the heart rate and a considerable decrease in blood pressure. The Crampton percentage rose in an atmosphere of 20° C., 50 per cent. humidity, and fell at 30° C., 80 per cent. humidity, these results signifying respectively an improvement and a deterioration in the circulatory system or its nervous control.

The Barach index of cardio-vascular energy represents the sum of the systolic and diastolic blood pressures multiplied by the heart rate. This fell in air of 20° C., 50 per cent. humidity, while at 30° C., 80 per cent. humidity, it rose above 20,000, the maximum which Barach has assigned to normal, healthy individuals.

The results indicate that as regards bodily temperature and the cardio-vascular mechanism, such a cool and comfortable atmosphere as 20° C., 50 per cent. relative humidity is beneficial, while the heat and humidity of an atmosphere of 30° C., 80 per cent. relative humidity, are deleterious.

49 (981)

Physical analysis of blood serum in nephropathies and cardiopathies.

By **E. E. BUTTERFIELD** and **W. H. BRADDOCK.**

[*From the Pathological Department of Bellevue and Allied Hospitals.*]

The current methods of recognizing renal insufficiency are based on the detection of a diminished rate of elimination of substances normal or foreign to body metabolism. The most reliable data are based on a study of the nitrogen, chloride and