ture, humidity, and the possible dust of the air. These factors determine the weight or density of the air.

In general, no accurate velocity pressure readings can be taken of any air current which is affected by changes of directions of the ducts. Accurate readings can only be taken in a duct which is straight and without turns and elbows for a distance of at least 50 times the diameter of the circular duct, or the greatest dimension of a rectangular duct. Where space conditions do not make such conditions possible, baffling or dividing the duct into numerous smaller ducts by division plates becomes necessary. (See Report on the use of the Pitot Tube, AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS TRANSACTIONS, 1914, Vol. 20,

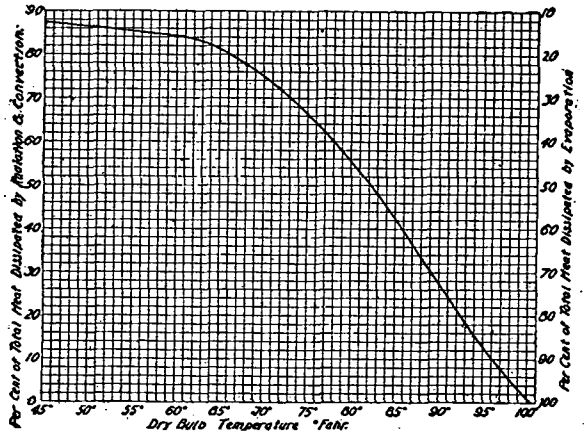

FIG. 9. RELATION BETWEEN HEAT LOSS FROM THE HUMAN BODY BY EVAPORATION, RADIATION, CONVECTION AND DRY-BULB TEMPERATURE

p. 211, and Standard Code for the testing of Centrifugal and Disc Fans, AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS TRANSACTIONS, 1923, Vol. 29, pp. 407 to 416).

Air Movement Determinations

Air movement is a vital factor in the prevention of stagnant areas and bodily discomfort. Where a determination of air movement is desirable the Kata-thermometer, as developed by Dr. Leonard Hill, of England, may be used. (See Report of Committee on Standard Methods for Examination of Air, *American Public Health Association, American Journal of Public Health*, Vol. 7, No. 1, January, 1917. The wet Kata-thermometer gives the rate of cooling by radiation, convection and evaporation. The dry Kata-thermometer gives the rate of cooling by radiation and convection. The difference between the two is the rate of heat loss due solely to evaporation. Air movement is a consideration in the determination of the effective temperature.

Air movement may be determined approximately by observation of the movement of a smoke cloud and the use of a stop watch; the smoke

cloud being formed by means of an ammonium chloride cloud device, or by a smoke bomb. Carefully balanced gas balloons may also be used.

SYNTHETIC AIR CHART

The form of the Synthetic Air Chart has been slightly modified since it was originally adopted by the Society and the form here presented is

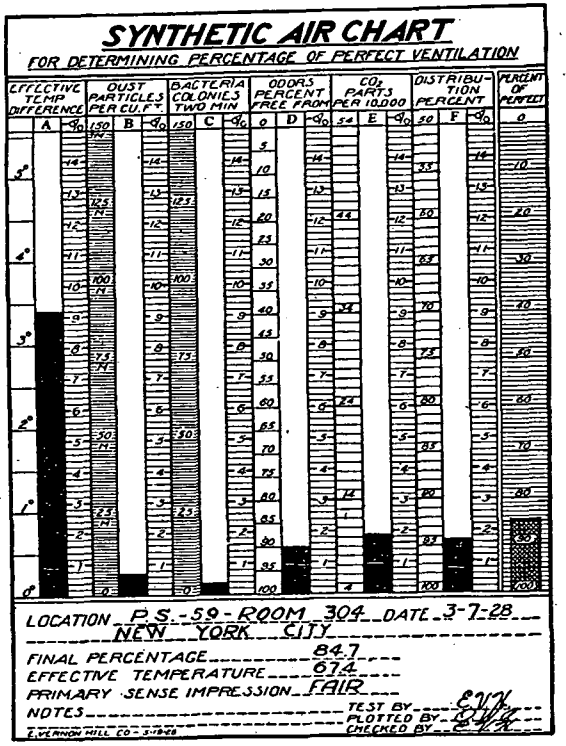

FIG. 10. SYNTHETIC AIR CHART

the one in use at the present time. (See Synthetic Air Chart, by E. Vernon Hill, TRANSACTIONS, A. S. H. V. E., Vol. 23, 1917).

Description of the Chart

The Synthetic Air Chart is designed for measuring the air conditions maintained in a room. Instead of speaking of the ventilation of a room as good, bad or indifferent, the results of tests are plotted on a chart, and the air conditions as a whole determined on a percentage basis. (Fig. 10).

This is done by plotting test data for all known factors that make up the air conditions. These factors with their proper weights are arranged in vertical columns across the chart.

The base of each column represents ideal conditions, or 100 per cent perfect. The columns are seven in number, and the first six are indicated by the capital letters, *A, B, C, D, E, F.*