

In studying this question we found that certain anesthetics increase the antitryptic action of the blood sometimes as high as 100 per cent. and more. Although there might be some other relation, this increase of antitrypsin in the blood alone is sufficient to stop the activity of proteolytic enzyme and thus to avert the shock. As the animal recovers, the amount of antitrypsin is gradually coming down to normal and accordingly proteolytic enzyme is able to exert its action only in part, thus extending the process in duration at the expense of severity.

68 (1000)

**The experimental plant of the New York State Commission on Ventilation.**

**By C.-E. A. WINSLOW.**

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

The physiological investigations of the last twenty years have indicated that the ordinarily observed results produced by the air of crowded unventilated rooms are due to thermal rather than chemical conditions, high room temperatures producing serious physiological derangements, while the chemical constituents of the air of such rooms appear not to exert any measurable effects. For the further study of the reactions of the body to moderately high room temperatures, and for a more exhaustive investigation of possibly undetected chemical influences, the New York State Commission on Ventilation has equipped an experimental plant in rooms courteously placed at its disposal by the trustees of the College of the City of New York.

Since the effects to be observed would naturally be slight, it was necessary to provide a plant on a large enough scale for the observation of a number of subjects over considerable periods of time. On the other hand, since we were dealing not with calorimeter experiments but merely with the effects of ordinary atmospheric conditions upon the human body, it was not essential that these atmospheric conditions should be regulated within closer limits than those attainable under the best practical conditions.

The observation room of the plant is ten feet by fourteen feet

and ten feet high and is insulated with two inches of cork board and a half inch coating of cement with a smooth white cement finish. A skylight at the top is fitted with three sashes and the room is entered through three doors with air chambers between. The subjects may be observed from the apparatus room through a window. Air may be supplied to the observation room through one or more of four 12-inch openings in a 12 x 18 inch vertical duct and may be exhausted from a similar duct at the other end of the same side of the room. The air flow is measured at the inlet by a meter specially designed for the purpose. For maintaining desired temperature and humidity conditions without fresh air supply, the observation room is equipped with ammonia cooling coils, steam radiators and a humidifying pan. Desk fans are provided for securing local air circulation. Continuous records of temperature and humidity in the observation room are made by means of a Bristol recording psychrometer and samples of air for carbon dioxide determinations are collected by continuous aspiration through a wash bottle of sulphuric acid.

The apparatus room (11½ x 14 feet by 11 feet high) contains two 8 x 9 inch multivane fans for supply and exhaust and insulated ducts by means of which air is drawn in from above the roof and delivered either to the observation room or the apparatus room itself. Air may also be recirculated continuously through the observation room. The volume of air may be varied between 30 and 350 cubic feet per minute. The main duct is provided with tempering and reheating coils, and with a Warren Webster air washer for humidification and a drying tank containing trays of calcium chloride. The apparatus is fitted at all essential points with automatic apparatus for temperature and humidity control. It has, however, always been found necessary to supplement the automatic regulation by manual control. The apparatus room also contains animal cages surrounded by revolving glass boxes for exposing animals to the effect of dust-laden air.

The ammonia coils in the observation room are served by a four ton Brunswick Refrigerating Co. compressor with appurtenances.

The plant was designed to maintain conditions varying from those existing out of doors or less up to 100° F. in zero weather, with

humidities varying from the saturation point to practically nothing. With the exception of the reduction of humidity in warm weather, which the calcium chloride tank does not satisfactorily accomplish, the plant has fulfilled all our requirements. The extreme range in temperature during the day is usually 2° and very rarely over 4° and the extreme range in relative humidity ranges between two and ten per cent. of saturation. The carbon dioxide remains usually below 8 parts per 10,000 when air is supplied and when stagnant conditions are maintained it rises to between 30 and 90 parts depending on the number of occupants in the room and the weather conditions outside which influence inevitable leakage.

69 (1001)

**The experimental methods of the New York State Commission on Ventilation.**

**By Frederic S. Lee.**

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

Since December 8, 1913, the New York State Commission on Ventilation has been conducting an extended series of experiments on the physiological and psychological action of various atmospheric conditions. For most of the tests human beings have served as subjects; a few lines of observation have been carried out on animals. The rate of the heart beat and the blood pressure have been studied by the usual methods and have subsequently been evaluated according to the Crampton, the Barach and other indices. Bodily temperature has been measured chiefly by clinical thermometers and at times by the constant temperature recorder of Leeds and Northrup. This instrument consists of a self-balancing Wheatstone bridge, is sensitive to one tenth of a degree, and makes on paper a continuous record of rectal temperature. The apparatus proved very prone to get out of order and for this reason could not be used as constantly as was desired. Muscular work was performed by the lifting of dumb-bells to a given height, the number of lifts being recorded by a telephone counter. For more exact determinations of the amount of work performed a Krogh bicycle ergometer was employed and proved very satisfactory.