genic bacteria in some of the other yards of air which the man will breathe in his lifetime. And a man only gets consumption once, scarlet fever and diphtheria once; few get pneumonia more than once. More than that: Let us say that only one man in four gets a tuberculosis infection; that is, a total 300-year period with 16 breath intakes during each minute of 300 years. What conclusion, then, is justified from a determination of the bacteria content of a single cubic yard of air?

Ventilation in schools is necessary for comfort during September and October, and May, June, July, and August in the Chicago climate. In the South we should add April at the front end of the season and November at the rear end. We may say, then, that a study of ventilation resolves itself into a study of ventilation for the months of November, December, January, February, March and April. It is not of much importance during November and April. January and February are the very trying months.

It has been our observation that school air is too hot and too dry. The temperature has ranged from 70 to 80 deg.; the humidity has been 30 to 40. The dust content has not been high. The odors are objectionable in certain schools in the poorer parts of town and in many schools on rainy days.

The Chicago schools are heated and ventilated as one item. The system used is the Waters. The air is taken in about 30 feet above the ground. It is not cleaned. It is heated to about 110 to 130 deg., according to the temperature of the outside air, the velocity and the direction of the wind, and the sunshine. It is discharged into the school-room at a point above the head of the teacher by a large opening. It is discharged under an average velocity of 370 feet per minute. It is exhausted near the floor line and usually on the same wall as the inlet. Eighteen hundred cubic feet per pupil per hour is pumped in.

The theory is that the air, being hot and going at a considerable velocity, will rise to the ceiling and flow across to the opposite wall, where it will fall from wall chill and then flow back along the floor to find its outlet. The system is plenum. Should the system work according to theory, the breathing zone of the children at the desks would be dead, and, therefore, polluted air. As a matter of fact, there are many currents and the air begins dropping to the floor almost as soon as it issues. The children situated back in the room do not get a very good supply of air. Much of the air short-circuits from the inlet to the outlet after travelling a short distance in the room.

What is the remedy proposed?

First.—Reduce the temperature of the rooms to a maximum of 68 deg. This temperature is more bracing. In such a temperature the exhaled air, being hot and moist, will rise right out of the breathing zone and be supplied by purer air.

Second.—Raise the humidity to 60 to 70. No possible objection can be raised to this except that it costs money to evaporate water and the windows will frost when the outside temperature gets to 20 deg. F. and below. The best way to humidify is to introduce a spray of steam into the column of incoming air, if the air is to be pumped in. If the humidity is raised to 60, the pupils will be comfortable with a temperature of 68 deg. F. What is saved on coal, as between 72 and 68 deg., will more than compensate for the steam which is used to humidify.

Some of the frosting of the windows can be prevented by putting a radiator under each window. In certain rare instances a fan throwing enough air against the glass to keep it warm can be used to prevent frosting. But, what harm does frosting do, anyway? Its harm is negligible as compared with the harm of overdry air. It keeps out but little light, and under certain conditions of sunlight will give a mellower, softer light, than the unobstructed pane. If the air is brought into the room through the radiators, it can be humidified by pans of water or by some of the patent humidifiers.

Third.—Blow out the air in the room at stated intervals. This is best done by raising the windows and allowing the air to blow briskly through. A change of the air four times an hour will be effected by currents which are so mild that they will not lift bacteria. In consequence, the bacterial flora of the air neither decreases nor increases unless it is being modified by animal inhabitation. If, however, the wind blows briskly in and out through