

the acid vapors and the ammonium vapors unite, a cloud of ammonium-chloride vapor is formed. This cloud is readily visible and the velocity and direction of the air currents may be studied from it.

Dust. Dust determinations are made by the use of a direct-counting instrument in which the air is caused to impinge against a cover slip coated with adhesive material. The particles are counted under the microscope and the result placed upon a cubic foot basis. By direct counting is meant a method where the dust particles are studied and counted as they originally existed in the air, and the particles are not broken up or altered in shape, size, or nature by processes of sampling or counting.

Bacteria. Bacterial determinations shall be made in accordance with the standard adopted by the American Public Health Association. Petri dishes 4 in. in diameter (see Fig. 3) containing standard agar, are exposed in the room for two minutes. They are then carefully covered and incubated for 48 hours at 22 deg. cent. The colonies on the plate are then counted.

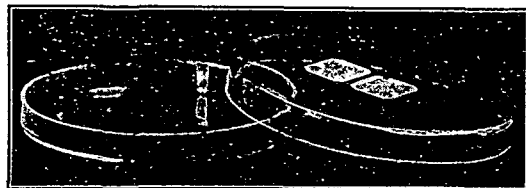


FIG. 3. CULTURE PLATES FOR DETERMINING THE BACTERIA IN AIR.

Odors. Odors shall be determined in accordance with the following rating:

100 per cent freedom from odors.....	Perfect
95 per cent freedom from odors.....	Very faint
90 per cent freedom from odors.....	Faint
85 per cent freedom from odors.....	Noticeable
80 per cent freedom from odors.....	Distinct
75 per cent freedom from odors.....	Decided
70 per cent freedom from odors.....	Strong

The determination shall be made immediately upon going into the room from the outer air.

Carbon Dioxide. The apparatus necessary to take samples of air for CO_2 determinations consists of a 120 cu. cm. rubber-stoppered bottle and a constant-pressure rubber bulb, as shown in Fig. 4. To take a sample, the rubber tube attached to the bulb is inserted to the bottom of the bottle and held at arm's length so that the sample will not become contaminated by expired air. The tube is closed by compressing it between the thumb and neck of the bottle and the net-covered bulb is filled with air by pressing the uncovered bulb with the hand; the thumb is then released and the intruding air re-

places the air originally in the bottle. This operation is repeated three times, after which the tube is removed and the bottle is tightly sealed with a rubber stopper. An analysis of the sample is then made with a Peterson-Palmquist air-analysis instrument, the result being given in parts of CO_2 per 10,000 parts of air.

In the chart in Fig. 5 is shown how the air supply may be determined from the CO_2 readings. Suppose an analysis of the air sample taken in the room shows that the average CO_2 content is 7 parts per 10,000. Then if the outdoor air contains 4 parts per 10,000, the difference is 3 parts. Locate the 3 on the horizontal scale of the



FIG. 4. TAKING AN AIR SAMPLE.

chart, and pass vertically up to the curve; from the point of intersection with the curve transverse to the vertical scale which will show that 2000 cu. ft. of air per hour per person is being supplied to the room.

Distribution. The distribution of the air in a room shall be determined from the CO_2 readings taken in the various parts of the room. The following example illustrates the method of calculating the result. Assume four samples taken resulting in the following analysis:

Station	Parts of CO_2 per 10,000
1	6.4
2	7.4
3	9.2
4	5.0
	Average 7.0