

After the values of all the factors have been determined by test, the results are shown on the chart by a heavy vertical line ($\frac{1}{8}$ in. wide) and the height of the line will indicate the results obtained in the test. Penalization for all the factors may then be read directly opposite the top of each line. All the “-%’s” are then totaled and the sum subtracted from 100 per cent to determine the Percent of Perfect ventilation for the room as a whole. This result is plotted in the last column headed Percent of Perfect. For example, if the sum of all “-%’s” found in the different columns is $15\frac{3}{8}$ per cent, then the difference between 100 and $15\frac{3}{8}$, or $84\frac{5}{8}$ per cent, is plotted in the last column as the final Percent of Perfect.

TO MAKE THE TEST

Temperature, Humidity, and Air Motion.—Temperatures and humidities shall be determined with a sling psychrometer. The extent and direction of air movement in the room may be determined by observing the velocity of a puff of vapor from an

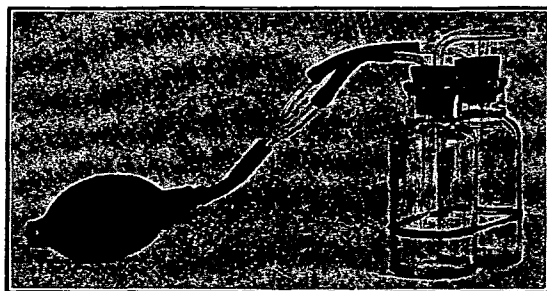


FIG. 57. AMMONIUM-CHLORIDE APPARATUS FOR DETERMINING VELOCITY AND DIRECTION OF AIR CURRENTS

ammonium-chloride apparatus, such as shown in Fig. 57. This apparatus consists of a bottle of hydrochloric acid and a bottle of ammonium chloride, each bottle having a two-holed rubber stopper supplied with bent glass tubing similar to a wash bottle. A small pressure bulb forces the air through the two bottles simultaneously, and when 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. 58) containing standard agar, are exposed in the room for 2 min. They are then carefully covered and incubated for 48 hr. at 22 deg. cent. The colonies on the plate are then counted.

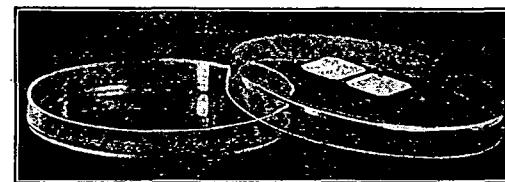


FIG. 58. CULTURE PLATES FOR DETERMINING THE BACTERIA IN AIR

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. 59. 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

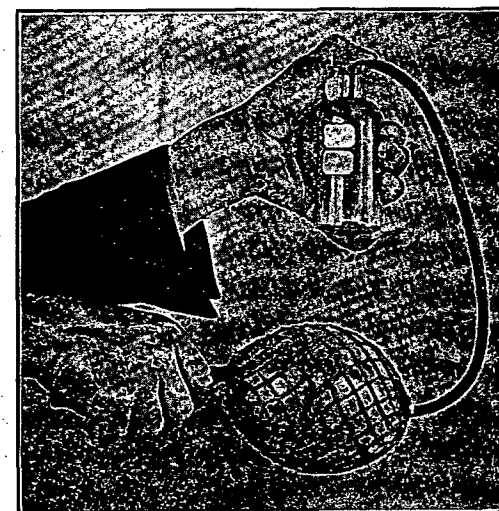


FIG. 59. TAKING AN AIR SAMPLE