

counted. If an incubator is not available, cultures may be grown at room temperatures (70 deg.) for a period of five days. If no colonies appear, the condition is read at 100 per cent, and if 500 colonies appear, it is read at zero per cent perfect. The percentage of perfection is reduced by one for each five colonies, for this factor. Penalization for poor ventilation is one-half as great.

Carbon Dioxide.—Carbon dioxide determinations are made, not to determine the purity of the air, but to determine the percentage of distribution and sometimes the quantity of outside air that is introduced into a room. The percentage of perfection on the quantity basis is 100 per cent if the carbon dioxide is the same inside and outside; namely, four parts in 10,000 parts of air. The percentage of perfection is reduced by 1 per cent for every three parts per 10,000 over that found in the outside air. This gives 100 per cent penalization for 300 parts of CO₂. Penalization for imperfect ventilation is 0.9 for the CO₂ factor.

Distribution.—The distribution of the air throughout the room is an important factor in ventilation. Imperfection in this factor is determined by the variation in percentage of carbon dioxide in various parts of the room. The percentage of variation of the various samples from the average CO₂ content of the room is the percentage penalization for poor distribution. Penalization for imperfect ventilation is 0.3 that for the distribution factor.

EXAMPLE IN THE USE OF THE CHART

Determine the percentage of perfection of ventilation in a room where the following conditions are observed. The room to be occupied by persons normally clothed and doing light work.

Dry Bulb Temperature.....	72 deg.
Wet Bulb Temperature.....	54 deg.
Air Velocity.....	Still air.
Dust Count by Hill Counter.....	10,000 particles per cu. ft.

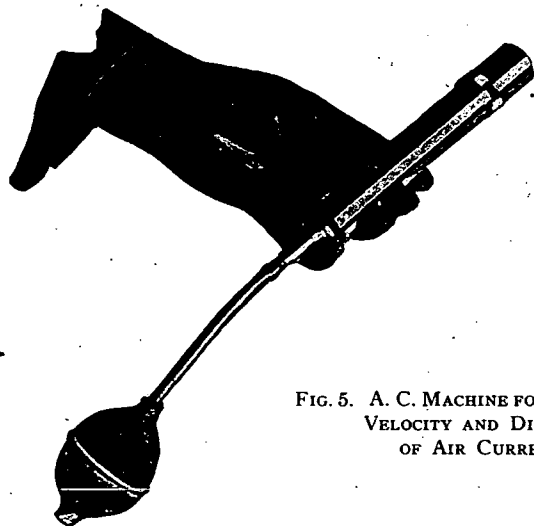


FIG. 5. A. C. MACHINE FOR DETERMINING VELOCITY AND DIRECTION OF AIR CURRENTS

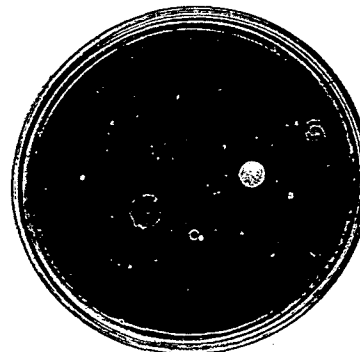


FIG. 6. CULTURE PLATE SHOWING COLONIES OF BACTERIA



FIG. 8. APPARATUS FOR OBTAINING AIR SAMPLES



FIG. 7. ODOROMETER CONTAINING STANDARD ODOR SOLUTIONS

Bacteria colonies developed in a 2 min. plate.....	10
CO ₂ analysis inside Station No. 1.....	6 parts in 10,000
CO ₂ analysis inside Station No. 2.....	6.3 parts in 10,000
CO ₂ analysis inside Station No. 3.....	5.5 parts in 10,000
CO ₂ analysis inside Station No. 4.....	5.0 parts in 10,000
CO ₂ analysis outside.....	4.0 parts in 10,000
Other objectionable substances.....	None

The effective temperature for the observed wet and dry bulb temperature and air motion is determined from Tables 1 to 7 in Chapter XVIII. From Table 2 (See Chapter XVIII) for still air, the intersection of the line for 72 deg. dry bulb and the column for 54 deg. wet bulb gives 66.0 deg. as the E. T. of the condition. For 100 per cent perfection 62.5 deg. E. T. is required for persons doing light work whereas the existing condition is 66.0 deg. E. T. or 3.5 deg. too high, which gives according to the chart, 89.5 per cent perfection and 10.5 per cent penalization for this factor and a penalization of 9.5 per cent for imperfect ventilation. This is indicated in the chart, Fig. 2.

Ten thousand dust particles per cu. ft. of air gives according to the chart 96 per cent perfection and 4 per cent penalization for this factor and 1 per cent penalization for imperfect ventilation.

10 bacterial colonies on a 2 min. plate gives 98 per cent perfection for this factor and a penalization of 1 per cent for imperfect ventilation.

A faint odor or 90 per cent free from odors calls for a 10 per cent penalization for this factor and 1.5 per cent penalization for imperfection of ventilation.