the air must be removed or high results will be obtained. A simple and inexpensive apparatus using this principle and sufficiently accurate for industrial health purposes is shown in Fig. 1.

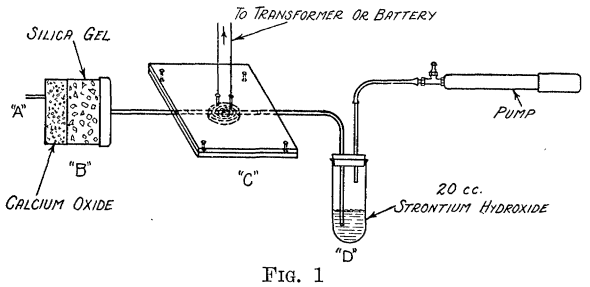

FIG. 1

The letter "A" designates the inlet to the apparatus. 3/16 inch copper tubing with brass fittings similar to those on automobile gasoline lines are used. The canister "B" is of tin and should have a capacity of at least four cubic inches. This canister is two thirds filled with silica gel and one third with calcium oxide for removal of hydrocarbon vapors and carbon dioxide, respectively. The copper outlet tube from canister leads to the combustion unit "C." This unit consists of two 3 inches × 3 inches × ¼ inch pieces of transite (Johns-Mansville) board bolted together with 4-⅛ inch brass bolts. A suitable central recess is made in one board as shown to carry the heating element of a nineteen cent automobile cigar lighter unit. These units are obtainable with one bolt terminal, and the other terminal may be made by notching out the head of a small cylindrical headed bolt and swedging the other end of the element in this notch. The edges of the transite board are made air-tight by the application of a small amount of furnace cement. The exit tube of the combustion unit is connected to a small bubbler "D," as shown. A suction pump of 55–60 cc capacity per stroke can be conveniently made from a 10 inch bicycle pump. A 3/16 inch tee is sweated to the bottom of the pump and then two ball check valves to the tee as shown. The current for the combustion unit may be furnished by a toy transformer supplying nine volts or from a six-volt storage battery.

The solution used in the bubbler is 1/2,500 normal solution of strontium hydroxide. This solution is conveniently standardized against 1/50 normal sulfuric acid (0.55 cc of conc. sulfuric acid (sp. gr. 1.84) in one liter of solution). 100 cc of strontium hydroxide solution is equivalent to 2 cc of N/50 sulfuric acid. Each liter of the strontium hydroxide solution should contain 15 cc of 0.1 per cent. phenolphthalein in 85 per cent. alcohol. The solution is stable if kept away from air containing carbon dioxide. If 20 cc of this solution is placed in bubbler and air pulled through at a rate of 100 cc per minute, then Table I will apply.

TABLE I

If red color (phenolphthalein) disappears after: Number of pump strokes	Parts per million of carbon monoxide present
1	2,000
2	1,000
4	500
8	250
16	125

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GROWING FUNGI ON CELLOPHANE

VARIOUS saprophytic fungi (Aspergillus, Fusarium and Verticillium) isolated from dead leaves were grown successfully on rolls of filter paper and of Cellophane in test-tubes. Each tube contained a few cc of Knop's solution with which the rolled sheets were in contact and by which they were continually moistened. Growth was equally good on both media. The transparency of the Cellophane permitted one to observe the growth of the organism directly, even with considerable magnification. The cellulose acetate appears to be partially hydrolyzed during sterilization and to improve the Knop solution as a nutrient for the fungi.

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