

essary to avoid contaminations while making transfers or plating out samples.

Under these conditions, permission was granted to buy a small air-filtering apparatus designed for ventilating bacteriological transfer rooms. This apparatus, consisting of a blower fan and a filter, was installed in a window of a laboratory 12 by 20 feet and 15 feet high. It pushes filtered air into the room, forcing out the contaminated air through doors or any other opening. Although this room is larger than that for which the apparatus was designed, it was thought advisable to see whether conditions in the room could be improved for bacteriological work.

For testing the ability of the filter to reduce the number of microorganisms in the air of the room 5 petri dishes 120 mm in diameter, containing solidified nutrient agar, were exposed for three minutes on the laboratory table. The results of the first test were very interesting; before using the apparatus, exposed plates had an average of 15 colonies per plate after incubating four days. After three days' use of the filter, the average was 2 colonies per plate; one hour after stopping the apparatus and opening the window, the average was 16.7 colonies. The test was repeated about three weeks later with similar results.

The apparatus was then transferred to another room 9 by 20 feet and 15 feet high and installed in the transom over the door. Petri plates of nutrient agar were exposed for five minutes in the morning with the window and door closed and the air still. On these, an average of 19 colonies developed in four days. Plates exposed after the filter had operated ten minutes gave only an average of 5 colonies, whereas those exposed ten minutes after opening the window, had 20 colonies.

After several days' interval, the observations were contained in the same room, still without any special cleaning, with the following results:

	Average
Closed room, air still.....	16.6 colonies
After ten minutes operation of filter.....	3.4 colonies
After one hour operation of filter.....	8.8 colonies
Ten minutes after stopping apparatus.....	11.0 colonies
Ten minutes after opening window and door ...	20.0 colonies
One hour after opening window and door.....	19.2 colonies

These results show that in these laboratories, it is possible to greatly reduce the chance of air contamination of cultures by installing an air filter. There are two points, however, which make it inadvisable to use such a filter in an office laboratory. In the first place, the noise of the fan is distracting if one wants to do any except routine bacteriological work. In the second place, the temperature in every test was two to four degrees Centigrade higher in

the room getting the filtered air than it was in the adjoining room with the window and door open. The only explanation of this seems to be that the air is heated that much as it is taken in over the motor of the fan. Of course, there are times when that would not be objectionable. As to its ability to furnish air free of microorganisms to a room, there can be no doubt. Petri plates, fifteen in all, exposed for five minutes each in the air current as it came from the filter remained sterile except in one case and then only one colony developed. Obviously, that was no fault of the filter.

The fact that the number of microorganisms suspended in the air is greatly reduced within ten minutes is interesting, as well as is the fact that the numbers seem to increase again, probably due to the stirring up of the dust in the room. For the present, it is planned to take advantage of this sudden reduction of suspended organisms by running the air-filtering apparatus only as it is desired to make transfers.

In these days when air-conditioning is beginning to be taken seriously, it may be well to look still further ahead to the day when conditioned and germ-free air will be forced not only into every bacteriological laboratory, but into every workroom where cleanliness is essential. In the meantime, an air filter, consisting of an electric fan and germ-proof filter offered for sale by a commercial firm, may be installed to force air freed of microorganisms into the transfer room and materially reduce the chance of contamination.

NATHAN R. SMITH

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