PUBLIC HEALTH

Water Tests Speeded

Use of membrane filter disks about the size of a silver dollar will also cut the cost of bacterial tests. Very important to bacteriology.

➤ FASTER, MORE ACCURATE testing of water supplies for purity and freedom from germs is promised through a membrane filter apparatus which has just undergone successful tests by the U. S. Public Health Service at its environmental health center in Cincinnati.

"This technique may prove to have an importance in bacteriology comparable to Koch's use of solid culture media," Surg. Gen. Leonard A. Scheele of the U. S. Public Health Service declared.

Mark D. Hollis, Assistant Sugeon General and Chief Sanitary Engineer, said: "The filter technique greatly improves testing in water bacteriology. It cuts down the time of analysis from a period of days to a period of hours. It reduces the number of operations needed for bacterial analysis. It makes it practical to take samplings of water many times larger than those employed by prevailing techniques. And it requires far less laboratory space and equipment. However, there is still much work to be done to establish and develop the full range of practical applications of this laboratory tool.

"The apparatus for the filter, described in the latest issue of PUBLIC HEALTH REPORTS, is so simple and so readily portable that bacteriologists may find it possible to extend their services to rural communities and other areas lacking the usual laboratory facilities.

"Although membrane filters have been familiar to research workers for many years, the techniques developed at the Environmental Health Center suggest the possibility of their practical widespread use. The cost of bacterial tests using the filters will be much less than by procedures presently used."

Each filter is a disk about 0.1 mm. thick and 48 mm. in diameter, or about the size of a silver dollar. The pores are regularly spaced and vertical, tapering toward the upper end. The size of the pores may be varied in manufacture. Filters with the larger pores permit the passage of approximately a quart of water at a pressure of one atmosphere in less than a minute. A filter with the smallest pores requires 100 minutes for the passage of the water.

No bacteria pass through the filter, although viruses may get through, Mr. Hollis said.

After bacteria are trapped on the filter, the disk is placed in a Petri dish against a medium which encourages the growth of the organisms under investigation and simultaneously represses the growth of other organisms. The development of appropriate culture media was a major task of the investigation at the Environmental Health Center, reported by Harold F. Clark, Edwin E. Geldreich, Harold L. Jeter and Paul W. Kabler. Media which are suited to other methods of bacterial analysis are not necessarily suited to work with the filter, according to Clark.

Science News Letter, August 18, 1951

ENGINEERING

Filters Use Fine Fibers

Finest glass fibers ever made may serve to screen out submicron dust and particles such as would result from atomic explosions.

➤ THE FINEST glass fibers ever made by man—one pound would reach 10 million miles—are being produced.

The finest glass fibers previously turned out on a commercial basis were more than three times the size of the new product of Glass Fibers, Inc., Toledo, Ohio.

Even the shortest wavelength of visible light is greater than the diameter of the fiber, the exact thickness of which is a military secret.

The new product is considerably finer than the 60/1,000,000ths of an inch fiber (about 1/20th the thickness of a human hair) announced last winter by the Naval Research Laboratory.

One possible use of the product, R. H. Barnard, president of the Toledo company, said, is in making a paper for filtering submicron dust and particles. Such paper would stop particles resulting from atomic explosions.

It can filter particles smaller than 1/10,000,000th of an inch in an unprecedented manner, straining out all but one particle from more than 100,000.

The Naval Research Laboratory has pointed out the superiority of gas mask filters made from fine glass fibers.

Widespread use of the new glass paper in electrical equipment seems probable, Mr. Barnard pointed out. It may be used as insulating tape for wire and cable, when impregnated with suitable resins, he said.

Other possible uses include applications in motors, generators, transformers, power-type capacitors and condensers for electronic equipment and television and radio receivers.

Lower electrical losses, greater high temperature stability and greater capacity per unit of weight and size are possibilities of the capacitors and condensers made with the thin glass paper.

Current production is going to the armed forces. Small quantities for commercial laboratory experimentation are not even available. Plants in nearby Waterville and Defiance, Ohio, are in production for the Navy. The tiny fiber material will become available to industry by late fall or early in 1952. A multitude of new uses then are expected to be developed.

Science News Letter, August 18, 1951

MICROSCOPY

Mirrors Help Study Of Cancer Cells

➤ DOING it with mirrors is a new approach to the study of cancer cells. The mirrors are in a reflecting microscope, so-called because it magnifies by mirrors instead of lenses.

The distortion-free images obtained are expected to give scientists a chance to investigate normal, abnormal and cancer cells and, with the aid of a spectroscope, to get a record of their various light-absorbing and emitting properties. These may serve as guides for identification of cells in diagnosis of cancer.

This research, by Dr. Robert C. Mellors at Memorial Cancer Center, New York, will be continued through a $10,000 grant from the National Cancer Institute, U. S. Public Health Service.

Study of how resistance develops to chemicals used in treatment of leukemia in children will be aided by a $15,000 grant to the University of Southern California, Los Angeles.

A total of 150 grants amounting to $1,416,760 for cancer research have just been made by the U. S. Public Health Service. The grants went to 78 hospitals, universities and other non-Federal institutions in 29 states, the District of Columbia and England.

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