fine adjustment one of the pipettes is then brought momentarily into the drop of spore suspension and a considerable amount of the liquid with its spore load is taken into the pipette by capillary action. With the mechanical stage the chamber is moved to a clear spot on the cover slip, and a certain amount of liquid expelled, by means of a long blowing tube, to form a small drop on the cover slip. This procedure is continued until a drop is obtained which contains a single spore. The second pipette is then brought into this drop and the spore removed. The drop of sterile agar medium is brought into position and the isolated spore deposited on it. As the spores are isolated, the cover slips with the agar drop and its single spore are sealed with sterile vaseline onto deep hanging drop slides, the well of the slide containing sufficient moisture to prevent drying of the agar, and the whole is incubated at the desired temperature.

Early results were most discouraging, as none of the single spores germinated. It was deemed advisable to germinate the spores in malt extract broth, and to isolate germinated spores shortly after the emission of the germ tube, in the hope that growth, once started, would be continued. That the procedure may be successfully applied, at least to some of the common, vigorous forms, is indicated in the accompanying table.

An experienced operator can, with considerable ease and with absolute certainty, isolate 20 or more germinated spores in the course of from three to five hours with the use of this micromanipulator method, so that it is apparent that single spore cultures of many organisms can be accumulated with considerable rapidity.

GROWTH OF SINGLE GERMINATED SPORES

Organism	Germinated spores isolated	Spores continuing growth	Per cent. continuing growth
(Ascospores)			
Aspergillus fischeri	8	5	62
(Conidia)			
Aspergillus fischeri	17	10	59
(Conidia)			
Aspergillus nidulans	8	3	37
Aspergillus sydowi	12	6	50
Botrytis sp.	8	7	87
Hormodendron sp.	12	12	100
Monilia sitophila	8	8	100
Penicillium digitatum	12	3	25
Penicillium islandicum	8	7	87
Syncephalastrum sp.	11	8	73
Trichoderma sp.	9	5	55
Totals	113	74	Av. per cent. = 65

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A METHOD FOR DETERMINING THE VOLUME OF SMALL PIECES OF TISSUE

A SERIES of test-tubes of varying sizes have each a capillary tube drawn off from one side, as shown in Fig. A. With the tube retained in a perpendicular position fluid is run into the tube to a point above the lower outlet and then brought down to this exact level by air pressure exerted through the mouth of the tube. For greatest simplicity direct mouth pressure has satisfactorily served this purpose.

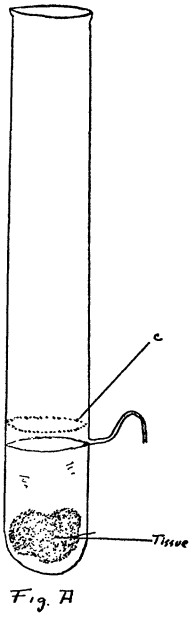

Fig. A

The tissue is then immersed in the fluid, and in accordance with the principle of fluid displacement, a new level is established at "C." By a procedure similar to that described above, the displaced fluid is collected through the capillary tube and its volume estimated.

Temperature and barometric corrections are hardly necessary, since in volumes as small as can be measured by this method the errors are negligible.

By this method volumes as small as one tenth of a cubic centimeter have with ease been estimated. It is, however, essential to use a test-tube whose diameter is only slightly larger than that of the tissue in order to secure a maximal rise of fluid and minimize error.

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ALOXITE AS AN ABRASIVE FOR GRINDING BONE SECTIONS FOR HISTOLOGICAL PURPOSES

SECTIONS of dry bone for histological study are prepared usually by one of the following methods: Grinding on a lathe, on compact pumice stone, on sand—or carborundum—paper of different grades of fineness, and lastly, on or between stones of suitable fineness. These methods are suitable but slow and tedious.

In the course of preparation of bone sections, the writer has found that aloxite powder (crystalline alumina) possesses exceptional abrasive properties for rapidly reducing bone to any desired thinness.

The technique here given has been found most satisfactory and particularly suitable for classroom use be-