and that the process of replacement of cerebro-spinal fluid by air causes their disruption.

E. M. JOSEPHSON

THE OXIDATION OF CARBON MONOXIDE CATALYZED BY NITROGEN DIOXIDE

THE rates of this reaction at 500° C. have been studied. The effect of NO_2 increases to a maximum. This can be explained readily by assuming that O atoms are furnished by the NO_2 which are removed by NO_2 as its concentration is increased. The catalyzed reaction was found to be very sensitive to small amounts of hydrogen or water vapor, the rate increasing rapidly to infinity, as the concentrations of these substances increases. This effect suggests the appearance of atomic hydrogen chains in the system, which increase the total rate of oxidation. A complete study of these reactions will be presented shortly.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A DEVICE FOR MICROMANIPULATION

DURING the summer of 1930, while working at the Marine Laboratory of the Collége de France at Concarneau in Finistère, a situation arose which led to the construction of a very simple device by means of which it is possible to accomplish, in a slightly crude way to be sure, many of the relatively delicate operations ordinarily requiring the use of one of the more complicated and expensive types of micromanipulator. Since it is easily constructed at no expense and has numerous possible applications, it may very well be of interest to other investigators and hence is described here.

The question which was being studied involved three types of manipulation, *viz.*, the removal of a rather tough membrane from an egg, the sectioning of the egg in a definite plane and the subsequent isolation of the two fragments of the egg. After numerous attempts to manipulate a fine glass needle-knife and a micro-pipette free-hand under the compound microscope, an experience which any one who has had no previous training will find most irritating, a small appliance was made which may be used with great dexterity by any one who has had any experience with the manipulation of the ordinary slide. Free and accurate movement in any direction depends on the fact that the experimenter is acquainted with the direction of movement of the object on the slide but has to learn the movements of a needle or similar piece of equipment moved by hand only to find that even after considerable practise such motions are likely to be jerky at the very moment when they should be most steady. The pipette or needle is therefore held stationary in the center of the field, while the slide bearing the egg or other object to be worked upon is moved from place to place on the carrier. One has the additional advantage of a moist chamber for the culture. With very little practise it is possible to become quite skilful in the use of the apparatus.

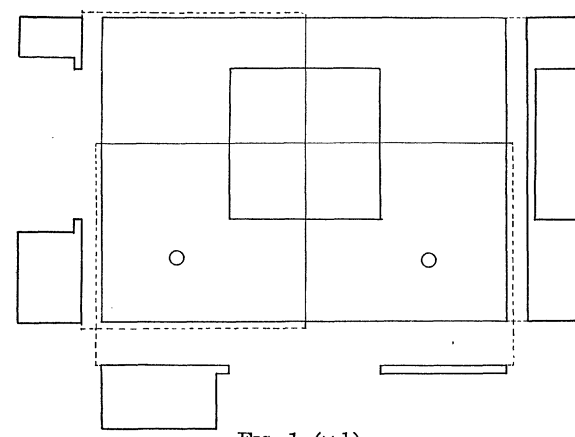

FIG. 1 (×½).

Drawings of the surface view as well as projections are given in Fig. 1. The measurements are for a convenient size, which may, of course, be varied as desired. Wood may be used in constructing the holder, though care must be taken that a non-porous variety is selected. The block must be planed and well sanded to reduce to a minimum the friction between the bottom of the block and the stage. It is also essential that the finished product be of equal thickness throughout if the object is to remain in focus as the carrier is moved from one position to another within the field. The exposed surfaces of the block may be waterproofed by waxing if desired, but none should be put on the lower surface, as that will increase the friction between the bottom of the block and the stage and irregular movements will result.

The apparatus may be described best in terms of its use. A piece of square filter paper is folded so that it is not over ½ inch wide and 4½ inches long. This is wet with tap water and placed in the undercut recess seen in the projection at the left and at the left of the projection below. Care must be taken that the filter paper is not too wide, for in that case it may touch the stage or moisture from it may dampen the bottom of the carrier. The clips of the