70.4 per cent., and that in density 9.27 per cent. All these increases are statistically significant. In those animals that reached maturity (3 to 4 months), the total number of cortical neurones was 38–40.6 per cent. greater than that of the controls. The corresponding figure for cell density was 14.8–27.6 per cent.

The question arose as to whether or not this increase in the number of cortical neurones, when produced artificially, would lead to an increase in maze-learning performance. A maze of 12 culs-de-sac of the Warner-Warden design[5, 6] was used. The experimental group consisted of 9 males and 7 females, and were the progeny of mothers that had been injected subcutaneously each day, from the 7th to the 18th or 20th day of pregnancy, with 1 cc of the commercial preparation of the hormone. The control group consisted of 13 males and 9 females, reared under normal conditions. The animals were approximately 2½ months old when tested, and were of the Sherman strain, secured from the Department of Animal Care, College of Physicians and Surgeons, Columbia University. The total number of cortical neurones showed an increase in the experimental group of 38.4 per cent. in the males and 40.6 per cent. in the females. The cell count was made when the rats were from 108 to 124 days old. There was no significant increase in brain weight, body weight or in the thickness of the cortex.

The increase in the number of cortical cells was not effective in speeding up maze performance. The male experimental group required somewhat fewer trials, and made somewhat fewer errors, but the differences were not statistically significant. The females, on the other hand, learned the maze somewhat less readily than the female controls. We must conclude, therefore, that the artificially produced cells have little or no effect on maze behavior. This conclusion should be corroborated by tests on larger groups before it is accepted finally. It is possible, of course, that such an increase in cortical neurones might be effective in a task representing a higher level of intelligence than maze-learning ability.

C. J. WARDEN
SHERMAN ROSS

THE ANIMAL LABORATORY,
DEPARTMENT OF PSYCHOLOGY,
COLUMBIA UNIVERSITY

STEPHEN ZAMENHOF

NEW YORK CITY

# SCIENTIFIC APPARATUS AND LABORATORY METHODS

## A PETRI DISH HOLDER FOR MECHANICAL STAGES

WORK in these laboratories has shown the need of a holder which will enable a Petri dish to be moved around under the microscope by the smoothly controlled action of the mechanical stage, thus facilitating observation and expediting such operations as delicate dissection or the precise removal of minute material. Obviously such an appliance must fulfil certain requirements. It must permit rapid easy insertion or removal of the dish, whether base down or inverted, whether covered or open, yet must hold the dish firmly and move it smoothly and precisely around on the microscope stage. It must fit the various types of mechanical stages in common use yet permit their full range of mobility so that any part of the dish may be centered, save, perhaps, the extreme periphery of the four-inch size.

To meet these requirements, as various manufactured devices proved inadequate, the writer, three years ago, developed a device which has served satisfactorily through extensive use in these laboratories ever since.

This holder consists essentially of a spring-steel clip which firmly clasps the dish, and is carried by a frame that fits snugly into the slide holder of the mechanical stage (Fig. 1, A). For the clip, the most exacting

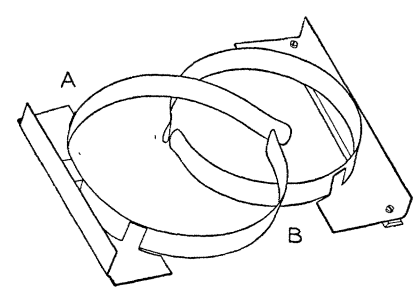


FIG. 1

part of the device, the chromium-plated steel springs sold by photographic supply stores for clipping over reels of 16 mm movie film have proved most satisfactory since they have adequate strength and a width (½ inch) suitable to the height (½ to ⅝ inch) of the common 3- to 4-inch dishes. For smaller Petri or Stender dishes, pieces of clock springs or of bicyclists' trousers clips are also suitable. The frame, of 16- to 20-gauge sheet brass, has a horizontal base about 3 × 1 inch to fit into the slideholder of the stage, with a crescentic aperture of a size to accommodate the dish

[5] C. J. Warden, T. N. Jenkins and L. H. Warner, "Comparative Psychology," Vol. I, p. 242. New York: Ronald Press, 1935.

[6] L. H. Warner and C. J. Warden, *Arch. Psychol.*, 15: 92, 5–27, 1927.

and with 3 ears bent up vertically to serve as a three-point attachment for the clip. A piece of film clip (of suitable length and curvature to encircle snugly the inner valve of the Petri dish) is soldered to these three ears with its ends pointing outward and its lower edge just clearing the stage surface (Fig. 1, A).

In use, this holder, its frame firmly gripped in the fingers of the mechanical stage and its clip snugly clasping the periphery of the dish, will move even heavy agar-filled dishes around on the stage without lagging or jerking and with a smoothness and precision that permit work under high dry magnification.

Although this original type of holder in suitable sizes has proved adequate for most of our needs, various modifications have since been developed for special purposes. For the built-in mechanical stages of such microscopes as the Spencer research model the writer uses a holder essentially similar in construction but with its frame screwed to a beveled brass strip that fits into the stage slot in place of the usual slide-holding fingers (*cf.* Fig. 1, B). A somewhat different holder for built-in stages has been devised recently by Dr. Ernest Runyon, of Agnes Scott College, who, without knowing of the writer's appliance, independently has used the same essential principle. In Dr. Runyon's model the clip of clock spring is attached at one end to a small Bakelite block which is screwed to one of the slide-holding fingers of the mechanical stage (*cf.* Fig. 2, A).

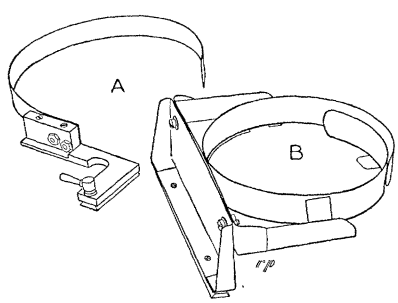


FIG. 2

For holding the uncovered lower valve of a Petri dish upside down so that danger of contamination is minimized during operations on pure cultures growing on nutrient agar the writer uses a holder that supports the valve at a height (about 1 inch) sufficient to permit working with mechanically manipulated needles or pipettes. In this model (Fig. 2, B) the spring clip grips the dish especially tightly and is provided with four lugs projecting slightly from its lower edge so that the dish, although easily inserted, can not fall out. The frame, which extends farther around the dish for greater firmness, is supported by a rigid upright whose beveled base fits the slot of the built-in mechanical stage.

Since these holders have proved helpful in our work, it is hoped that the foregoing description may extend their usefulness to other laboratories.

WILLIAM H. WESTON

HARVARD UNIVERSITY

## THE USE OF DRIED PLASMA FOR THE COAGULASE TEST

THE coagulase test has become an outstanding test for the identification of pathogenic staphylococci.[1,2,3,4,5,6,7] Experiments recently conducted have shown that the test can be satisfactorily carried out, using plasma dried by the cryochem process. Using rabbit plasma (1 per cent. sodium citrate) dried in a modified cryochem apparatus constructed in these laboratories, coagulase tests have been run on a series of coagulase negative and positive staphylococci supplied by Dr. W. N. Plastridge and Dr. J. M. Murphy. Controls were run on each culture, using fresh undried plasma. The technique of Fish[7] was used. Plasma (dried or fresh) was diluted tenfold with physiological saline and inoculated with a large loopful of overnight growths of staphylococci. Perfect agreement between the results with fresh and previously dried plasma has been obtained, clotting having occurred with the strains studied within six hours.

Certain advantages are gained in conducting the coagulase test with dried plasma. Large quantities of plasma can be distributed in convenient amounts, dried and stored for future use. Periodic bleedings at frequent intervals are dispensed with.

The method should facilitate the work of clinical and mobile laboratories.

EDWARD J. FOLEY

LABORATORIES OF BACTERIOLOGY,
UNIVERSITY OF NOTRE DAME

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