SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN IDEAL MOUNTING MEDIUM FOR MYCOLOGISTS

DURING the past three years the writer has used Amann's mounting medium with unusually satisfactory results. Although it is in rather general use abroad, this medium does not appear to be widely employed in this country, despite its many advantages over eosine-glycerine. In the study of dried material there is little delay, for this medium almost immediately restores the turgor of the specimens, while with fresh material there is no plasmolysis, especially in the higher fungi, and at the same time the medium serves as a killing agent. In addition to its application to mycology, the solution has been successfully used by Dr. Edgar Anderson, of this institution, in the course of his study of the pollen grains of *Iris*.

The formula, after Sartory,[1] is as follows:

Carbolic acid crystals	20 grams
Lactic acid, syrup	20 "
Glycerine	40 "
Distilled water	20 "

For greater rapidity in mixing the above materials, they may be heated over a low flame. When the solution has cooled, it may be used as made up, or should a dye be desirable, as is often the case with hyaline specimens, then .5 per cent. of cotton blue should be added. Frequently this concentration of dye is excessive, in which case the color may be made more dilute by the addition of varying proportions of the original medium.

Permanent preparations may be made by allowing the mounted specimen to stand a week in a desiccator to allow the water to evaporate, otherwise the ringing cement (preferably King's amber cement) will tend to run under the cover-glass. The lactophenol medium can also be used in connection with Diehl's[2] method of making permanent preparations if the same precautions (desiccation) are followed.

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NOTE ON PREPARATION OF COLLODION BAGS

FOR those interested in the use of collodion bags for dialysis, classroom experiments in physiology, etc., where uniformity and ease of preparation are important, I should like to call attention to two papers doubtlessly overlooked at this late date: Harris, N. M., *Centralb. f. Bak. und Par.*, I, 32, 74, 1902, and Gorsline, C. S., SCIENCE, p. 375, March 7, 1902.

Both authors describe the formation of a collodion bag on the outside of large gelatine capsules held by heated glass tubing thrust into one end, over which the collodion may form a narrow neck to the bag of perfect uniformity and free from flaws to any desired thickness. Warm water allowed to flow into the capsule after drying of the outer collodion coating dissolves the interior gelatine wall, leaving the perfect collodion bag. The glass tubing may be left in place or removed, as desired. This apparatus was originally intended to contain bacterial culture material for insertion into the peritoneum, allowing dialyzable bacterial products to diffuse out in immunity experiments, but it appears that this method may be diverted to other uses. I have found the method excellent. Harris gives a brief history of previous attempts to make such sacs on the ends of glass tubing.

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SPECIAL ARTICLES

ADAPTATION OF RICE TO FORTY CENTURIES OF AGRICULTURE

THE late Professor F. H. King in his book "Farmers of Forty Centuries" depicts the high level of crop production maintained for many centuries in some of the densely populated areas of oriental countries. Without the use of mineral fertilizers, depending almost entirely on occupational offal for purposes of soil improvement, Asiatic countries have maintained rice production in many sections sufficiently high to support their teeming millions. Various has been the comment or "explanation" on this phenomenon that appears as a paradox in the maintenance of soil fertility compared to the exhaustion of the soil by continued cropping of land to the cereals of occidental countries if practiced without fertilizers. Although the culture of rice (paddy) differs from that of wheat and barley in that the fields are usually submerged, the quantity of water applied annually usually does not contain sufficient nutrients to replace those taken from the soil by a normal crop of wheat or barley.

Results obtained in investigations to determine the smallest percentage of certain elements that can obtain in mature plants appear to throw light on the phenomenon of large yields of rice from lands cropped to this plant for many years continuously. The method employed in these experiments was to have test plants absorb varying quantities of a given element or elements by growth for varying lengths of time in a complete nutrient solution, subsequently

[1] Sartory, A. "Guide des manipulations de mycologie parasitaire," p. 100. Paris. Undated.

[2] Diehl, W. W. SCIENCE, N. S. 69: 276. 1929.