In the Laboratory

A Superior Pith for Free-hand Sections

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The dry pith of mature stalks of the rice-paper tree, *Tetrapanax papyriferum* Koch, has proved superior to commercial pith (elder) for use in the free-hand sectioning of plant material by the writer for a period of years.

This pith is white, devoid of vascular bundles or other hard tissues, and of uniform texture. The plant is in cultivation largely as an ornamental in the southern United States and was first used by the writer at Louisiana State University, where he found it growing on the campus. The pith is extractable from the dead stalks during the winter in straight rods 1.5 cm. in diameter and up to a meter or more in length, the pith being usually continuous and uniform through the nodes.

Under the binocular microscope (wide field, long working distance) it has been found possible to cut satisfactory sections of such fragile materials as leaves, stems, and roots of healthy or diseased plants. For example, this pith has been used to section leaf lesions with fruiting bodies of fungi, galls bearing the so-called X-bodies of a virus (Fiji disease of sugar cane causing galls on leaves), and tobacco stems and leaves affected with the bacteria, *Phytomonas solanacearum*. It has also been used to section roots of plants affected by fungi, bacteria, nematodes, etc., such as roots of sugar cane affected by the fungus, *Pythium arrhenomanes*. It has proved equally successful in working with fresh material from the field, dry, preserved material, or specimens which have been kept in fixing solutions.

Double-edged blades are very helpful for the sectioning. A small piece of material to be sectioned is placed in the pith and held by a clamp which is open at the top (Hoffman Screw Compressor type). The sectioning is done under the binocular microscope. For best results, the sections are made in dry pith and then fixed as soon as they are cut. By means of a needle (wetting the tip of the needle first), the sections are transferred from the pith or blade to a drop of water or stain solution on a glass slide or to the fixing solution. Direct transfers to a drop of lactophenol, with or without cotton blue, and then gently warming the slide gave good results.

This technique was used by the writer in the studies of host-parasite relationships, anatomical and physiological studies of the red rot disease of sugar cane (*1*), and others.

Reference

1. CARVAJAL, FERNANDO, and EDGERTON, C. W. *Phytopathology*, 1944, 34, 206–213, 827–837.

A Culture Method for Certain Marine Algae[1,2]

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There is an abundant literature describing the media and procedures for developing unialgal cultures of various marine phytoplankton organisms. Most of these methods demand considerable time as well as specialized equipment or technic. To facilitate studies of the dietary requirements of the larval blue crab, a simple and speedy method was needed for establishing and maintaining unialgal cultures of several plankton organisms at our station on the York River. In meeting a somewhat similar problem, Loosanoff and Engle (*Science*, 1942, **95**, 487–488) found that complete fertilizers[3] of the formulae 5–3–5 or 6–3–6 in solutions of 1 gram of fertilizer to each 1,000 cc. of water provided effective media for growing plankton. Tests of this method favored it for our purpose, but there were two limitations: (1) the undissolved residue obscured early indications of growth and was objectionable to the feeding larvae, and (2) there was an excessive formation of bacterial gloea which inhibited or rendered feeding difficult. The following report describes a logical modification in the preparation of this medium for laboratory use and a simple dilution method used for establishing unialgal cultures.

The usual precautions are taken in cleaning glassware. The water used for rinsing and in the preparation of culture solution is previously filtered through a thick layer of nonabsorbent cotton to remove any larger organisms, silt, or detritus present.

To a flask containing 1,000 cc. of filtered water is added 0.5 to 1.0 gram of pulverized 5–3–5 or 6–3–6 fertilizer and, with frequent shaking, the mixture is brought to a slow boil over a low flame. After several minutes it is set aside and the medium allowed

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[2] The author is indebted to Dr. V. L. Loosanoff for the supply of fertilizer used and for much valuable information and advice.

[3] Manufactured by the American Agricultural Chemical Company, 50 Church Street, New York City.