the component of the red cell affected by saponin might be identical with the virus receptor. However, the action of the virus and the cholera filtrate might make more accessible an inhibitor of saponin, such as a protein or lipid.

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IN THE LABORATORY

Photograms of Small Bones and Skulls

ERNEST C. DRIVER

Department of Zoology, Smith College

In work involving the comparison of small skulls and bones, especially those prepared by the alizarine-potash method, the writer found the usual photographic methods inadequate and time consuming.

Pictures with good depth of field and with definite and exact degree of enlargement were quickly and easily made by the use of a simple wooden frame in a regular condenser-equipped enlarger. Bolts were removed to separate the enlarger at the place where the negative carrier is inserted, and a black-painted wooden frame, high enough to accommodate a standard finger bowl, was fastened in place of the negative carrier. Fig. 1 shows the general

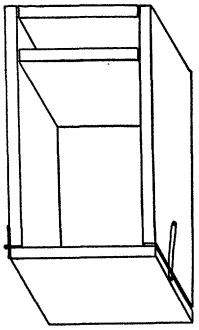

FIG. 1

plan of construction and bracing. A piece of clear glass, such as a cleaned photographic plate, was placed below it to support the specimen in its container and to avoid the possibility of spilling fluid on bellows or lens.

In use, the specimen, in a finger bowl or other suitable container partly filled with glycerine, is placed in the frame and the image focused as in ordinary enlarging. If a fair depth of glycerine is used, the specimen may be kept far enough from the bottom of the dish so that any irregularities in the latter will not be superimposed on the image. The specimen may be oriented through the opening made by the hinged part of the frame. A piece of transparent celluloid ruler, placed in the same plane in the glycerine as the specimen, will also be projected and will give the operator a ready method of determining (and recording on the margin of the print, if desired) the degree of enlargement. When orientation and degree of enlargement are satisfactory, the front part of the frame is closed and held by a rubber band, to avoid stray light, the lens stopped down to f. 16, and the exposure made on regular, normal-grade, enlarging paper. Development will result, naturally, in a white image on a black background. The thinner parts of the bones and sutures allow some light to pass, so that the resulting print, if exposed and developed for detail rather than for contrast, will have an appearance similar to that of an X-ray.

The writer and his students have found this to be a rapid and easy method, giving results much superior to those obtainable with the cameras at their disposal.

Apparatus for Partition Chromatography on Paper

F. C. STEWARD, W. STEPKA,[1] and JOHN F. THOMPSON[2]

Department of Botany, University of Rochester

Increasing use of the methods of partition chromatography on paper (*1*) in the separation and detection of amino acids, peptides (*2–5, 12, 13*), organic acids (*11*), and sugars (*8, 9*), and the obvious applications of the method in conjunction with radioautographs (where the compounds separated by the chromatogram contain radioactive isotopes, *6, 7*), arouse interest in devices which enable the technique to be conveniently performed. A recent note by Longenecker (*10*) describes a method of making the glass troughs from which the solvents are made to flow over the paper in the manner familiar to users of this technique. In making the technique suitable for routine and quantitative work we have experimented in this laboratory with various types of troughs. The note by Longenecker prompts us to describe our solution of this part of the problem in ad-

[1] Now of the Division of Plant Nutrition, University of California.

[2] Fellow of the National Institute of Health.

vance of a more complete statement of our procedure elsewhere.

The nature of the solvents used (phenol-saturated with water and a collidine-lutidine mixture, *5*) necessitates a surface as resistant as glass. Glass troughs 30″ long and 1¾″ in diameter have proved inconvenient to make and somewhat fragile. In the search for materials from which to make troughs of the desired pattern, many possibilities were considered. Troughs constructed from plate glass, using a variety of cements, were tried. The use of certain plastic materials as well as resistant substances which could be applied as paints to troughs made from nonresistant materials were also considered. Finally, the troughs were designed with a triangular cross section (Fig. 1), and satisfactory ones (Fig. 2) were made to

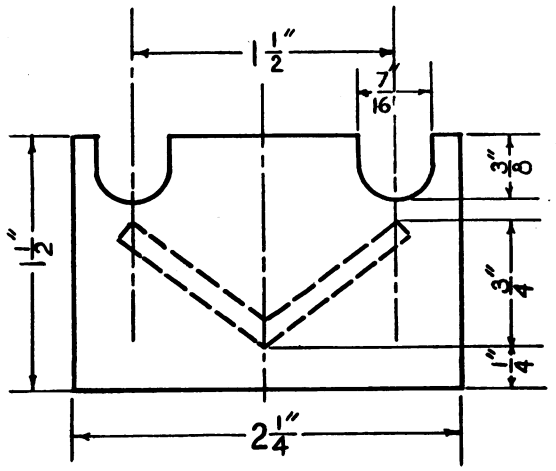

FIG. 1

specifications from sheet metal by the Pfaudler Company of Rochester, New York. The sheet metal was pressed to give the required angle (Fig. 1), and end plates were welded to the trough, the whole surface of which was thoroughly coated with a resistant enamel.

The design embodies the following features:

The V-shaped trough (34″ long) carries the solvent (70–75 ml of phenol or collidine-lutidine), into which one edge of the paper is allowed to dip.

The troughs stand upon their end plates, which also carry support for two horizontal glass rods (7/16″ or 10 mm in diameter). The latter are mounted exactly over the edge of the trough in such a way that the chromatographic paper passes over a rod and then hangs vertically but does not touch either the inside or the outside edge of the trough.

The immersed edge of the paper is held in the solvent by an overlying piece of stout glass rod, or sealed tube filled with lead shot, 7/16″ in diameter and with its ends bent at right angles to facilitate handling.

The over-all width of a trough with two papers in place is kept to the minimum (2¼″) so that the maximum number may be used in each cabinet. We now use as many as four troughs carrying 8 papers in a single cabinet about 18″ wide.

The troughs as thus constructed require no additional support, are robust and easy to clean, and, with their papers in place, are self-contained and may be placed in, or removed from, the cabinets. The enameled surfaces have proved to be completely resistant to the solvents. Care is necessary, however, to avoid chipping the enamel.

Our present large cabinets are fitted with leveling screws. The troughs, with their papers in place, are put in position in the cabinets some hours before the liquid is added. During this time the paper comes to equilibrium with the solvents (phenol-water or collidine-lutidine-water) in the cabinet. The addition of the sol-

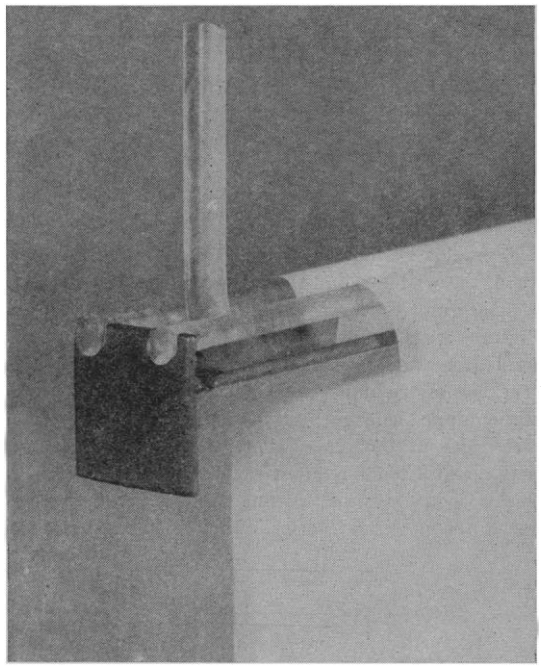

FIG. 2

vent to each trough is made by pipette through a small hole in the lid of the cabinet which is then promptly closed with a stopper.

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