While conducting solution culture experiments during last year, the author found that by the principle of maintaining the dripping unit at the changing level of the solution in the reservoir of fresh solution, the problem was simplified. A most uniform, continuous flow may be accomplished in this way. Fig. 1 shows the construction of the apparatus employed in this work.

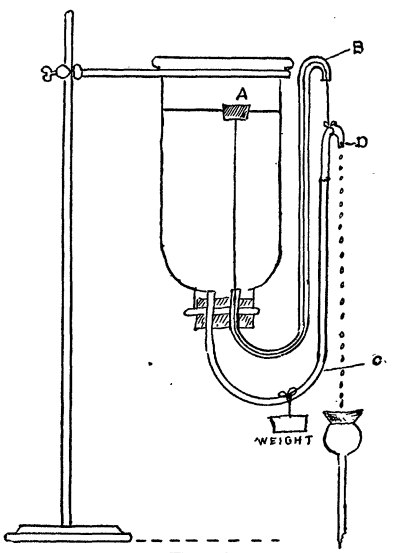

FIG. 1

In this apparatus a piece of paraffined twine passes from the cork float *a* to the bottom of the reservoir, then through a stationary tube *b*, and is fastened to the dripping unit *d*. The dripping unit *d* descends at the same rate as the level of the solution in the reservoir, since it takes up the slack of the cord which leads from the float *a*. The descent of the dripping unit is made possible by a rubber tube connection *c*, bearing a small weight.

This apparatus combines simplicity of construction with a readily adjustable flow of solution. Neither capillary tubing nor clamps are required in its construction. Air bubbles are carried through a thistle tube[1] into the culture jar with the drops of solution, thereby providing a constant oxygen supply for the plant roots.

The author wishes to express appreciation to Mr. C. W. Myers for making the diagram in Fig. 1.

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A CONVENIENT RETRACTOR FOR USE IN OPERATIONS AND DISSECTIONS OF SMALL-SIZED ANIMALS

THE following instrument is recommended for use as holder or retractor in operations and other manipulations on small objects: Into the top of a rubber vacuum suction cup (about 1 inch in diameter) a glass rod is fitted. The rod is bent into a horizontal position, drawn out to a suitable width, and its end is shaped into a hook, as shown in the diagram. The

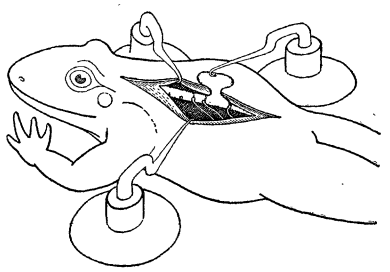

FIG. 1

moistened cup, when pressed against the polished surface (glass, enamel, bakelite, etc.) on which the animal rests, sticks for any length of time, giving the hook a firm hold, with enough elasticity to prevent injury to the retracted tissues. Horizontal adjustments are effected by sliding the cup along the table surface. Vertical adjustments within narrow limits can be obtained by pressing the cup more or less tightly against the table. If vertical adjustments of greater extent are desired, the glass hook should be mounted on a metal cuff sliding up and down a metal rod inserted into the top opening of the rubber cup. Skin edges, muscles, blood vessels, nerves, etc., can thus be conveniently gripped and retracted so as to give free vision and access into the deeper fields of the operation.

With appropriate modifications the instrument can be used for many other purposes in the laboratory, for instance, as holder for stimulating electrodes.

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[1] R. P. Marsh, SCIENCE, 82: 256, 1935.

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