

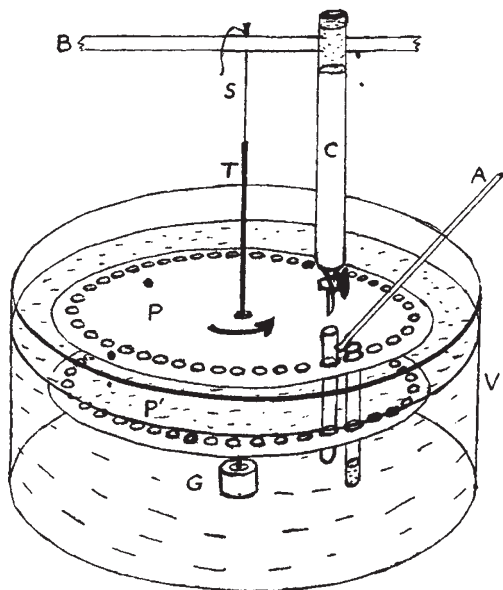
The apparatus can be adapted for use with a variety of culture vessels, and has a filling-capacity of three to four hundred per hour.

E. F. COLLINGWOOD

Department of Agricultural Botany,
King's College,
University of Durham,
Newcastle upon Tyne 1.
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A Simple Automatic Fraction-Cutter for Liquid Columns

WITH increasing use of chromatographic columns, the need has arisen for automatic fraction-cutting apparatus. Stein and Stanford Moore¹ have devised such an apparatus in which the fraction is measured photo-electrically and the battery of receivers then moved on by an electric motor. Randall and Martin² have recently described an ingenious mechanical fraction-cutter in which an intermittent siphon cuts the fractions. The weight of the fraction operates an escapement, bringing the siphon opposite the next receiver, the rack of receivers being stationary. In the apparatus described here, the receiver, which is depressed by the weight of the fraction, acts as the escapement. Randall and Martin used the torque of a twisted string to move the siphon delivery tube, and this idea has been copied here to move the whole rack of tubes.



In the diagram, two circular disks of thin aluminium PP' are drilled just within their peripheries with holes very slightly larger than the tubes it is intended to use, with the holes as close together as the drilling will permit. T is a 3-mm. screwed rod to which the disks are attached by nuts, and S is a string passing through a narrow hole in the fixed beam B . G is a small block of brass drilled so that the lower end of the axle T is kept loosely in position. C is the chromatographic column or other source of liquid to be fractionated. With the disks and rod hanging by the pegged string from the beam, and the

lower end just retained by the guide G , the vessel V is filled with water until the level reaches the upper disk P . The thin, rimless test tubes are then inserted in the holes and should bob up and down freely when lightly touched, with practically no sideways movement. The string S is twisted, while the rack of tubes is prevented from turning by the light aluminium strip A . At the start, A lies between two of the tubes (a tube must be omitted to make room), the liquid drips into the tube which A is touching and which is directly under the column. As the liquid collects the tube sinks, and eventually, with the addition of a single drop, passes under the tip of A , the torque of the string then bringing the next tube under the column. It has been found advantageous to have a safety razor blade at the tip of A , mounted almost horizontally. Impact of the fresh tube against A can be made to jerk a recording pen. The tubes can be readily sorted beforehand by filling the rack and removing those which project far below or above the mean height. By altering the level of the tip of the strip A the fraction size can be altered. With sorted tubes the fraction size is not very variable. If the column is allowed to drip too rapidly, or the tubes are spaced too far apart, there is a risk of a drop of eluate falling between two of the tubes before a fresh tube has moved into position, and, moreover, the torque on S must not be too great or the friction of A against the tubes will prevent their descent.

D. M. P. PHILLIPS

Courtauld Institute of Biochemistry,
Middlesex Hospital Medical School,
London, W.1.

¹ Stein, W. H., and Moore, Stanford, *J. Biol. Chem.*, **176**, 337 (1948).

² Randall, S. S., and Martin, A. J. P., *Biochem. J.*, **44**, Proc. ii (1949).

A Pressure-Cooked Non-Moulding Adhesive Flour Paste

THE common boiled-flour adhesive paste has for laboratory and office use the disadvantages that (as often prepared) it is messy to make, difficult to get of uniform consistency, and falls easily a prey to moulds. The use of a common domestic pressure cooker has enabled me to work out a recipe the product of which appears to meet the three objections above.

75 gm. wheat flour and 1 gm. powdered alum are stirred into 500 c.c. of a 1/1,000 solution in water of mercury perchloride at room temperature. The resulting thin batter is put into an enamel basin and pressure-cooked for 10 min. The cooker is allowed to cool slowly, and opened when pressure has fallen. The cooked paste is briskly beaten with a fork while hot, which operation distributes any unevenness in consistency, and appears also, by aerating the mass, to give the cooled paste an attractive waxy appearance. A few drops of oil of cloves or of lavender are stirred into the mass when cool, for reasons which may be merely traditional.

I have found that this adhesive resists moulds even under tropical conditions; and it may be noted that since the mercury solution is the liquor hydrargyri perchlor. of the Pharmacopœia, the paste is not poisonous.

Vanua Levu,
Fiji.
March 23.

LINDSAY VERRIER