

## Notes

## Improved Method of Sealing the Capillary Tubes in the Rast Modification of the Barger Method of Molecular Weight Determination

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In the determination of molecular weights by the Rast modification of the Barger method it has been found that by operating in the manner described below the comparatively large air space at one end of the capillary tube and also the necessity of twice drawing out one end of this capillary can be avoided. The method has the further advantage that the liquid is fixed in both ends of the capillary without heating the capillary close to the enclosed solutions. This minimizes the danger of volatilizing some solvent or possibly decomposing some of the solute.

Assume that the standard solution and the test solution have been introduced into the capillary with the prescribed 3–4 mm. air space separating them, and that the tube has been melted shut on the right and drawn out 2 cm. to hairbreadth on the left as Rast describes.<sup>1</sup> Now instead of breaking off the left end at the end of the hair, it is allowed to remain, leaving a funnel-shaped reservoir. The tube then appears as illustrated in Fig. 1. The right end is now broken off and the tube tilted

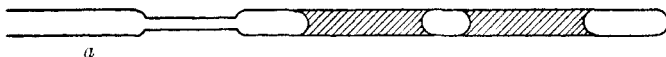


Fig. 1.

so that the liquid flows back through the hair to a position "a." The tube is then drawn out on the right to hairbreadth for 2 cm., broken at the end of this hair and tilted so that the liquid runs into and fills it, whereupon it is sealed by carefully touching it in a micro flame. Some of the liquid should remain in the funnel on the left so that the hair on the left is still filled. This funnel is then broken off and the end of the hair passed rapidly through a micro flame to expel a small portion of the solution before sealing as on the right.

A 5 × 17 cm. glass plate with a line etched through the center parallel to the short side supplants the 1–2 × 17 cm. plate used by Rast. This allows eight to ten tubes to be placed on one plate. The etched line takes the place of the hair covered with Canada balsam. When it stands in water, balsam gradually becomes opaque and must be replaced daily.

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(1) K. Rast, *Ber.*, **54**, 1979–1987 (1921).