Chromato-stack, a simple technique for improving the efficiency of thin-layer chromatography

In a recent paper[1] the author has described a new system for thin-layer chromatography using discarded photographic plates as glass supports. The plates are arranged in long rows on a desk and a simple spreading device is used to coat several plates at once.

The 9 × 12 cm photographic plates may take 5 or 6 samples, whereas the 12 × 16 cm plates correspond to ordinary chromatographic paper sheets and take 10–12 samples. Ordinary developing tanks hold only 2 plates at a time but the Chromato-stack technique described here makes it possible to develop 8–12 plates simultaneously. The technique is very simple, though efficient. The only equipment necessary consists of ordinary rubber bands and small plastic pellets, such as are obtained when punching 5 mm holes in 2–3 mm thick polythene sheets.

Figs. 1–4 show the principle. After spotting the various extracts or solutions, the plates are put on the desk. On each corner of a plate a plastic pellet is placed (Fig. 1). A new plate is put on the top of the first one, four new pellets are placed in the corners again (Fig. 2) and in this way the stack is successively built up. Finally, a clear plate is put on the top, and the stack is fastened together with rubber bands (Fig. 3). Thereafter the stack may be put into a suitable glass (or polythene) tank for developing (Fig. 4).

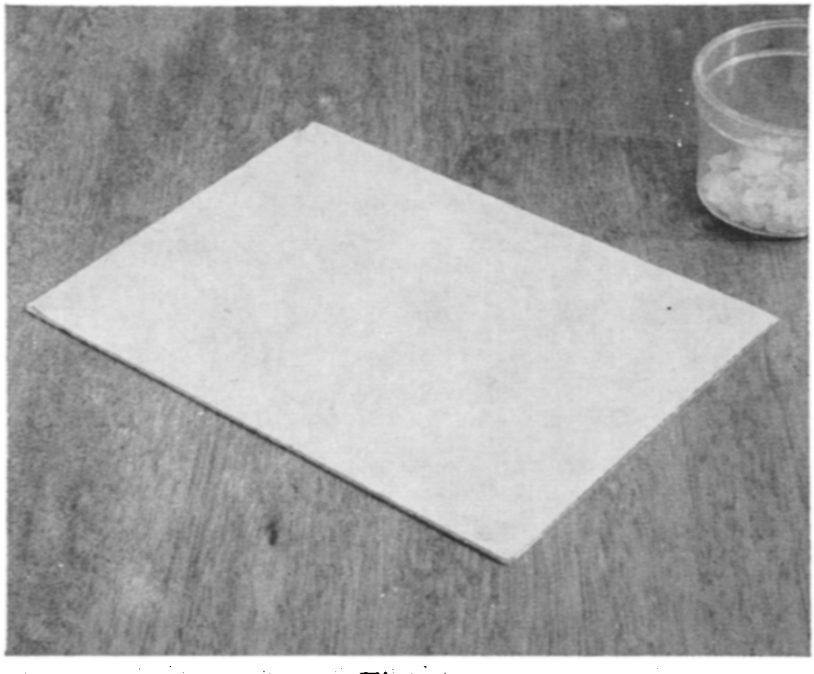

Fig. 1.

Simultaneous development of 60–120 samples (usually in less than one hour) is not the only advantage of the Chromato-stack technique. The narrow air spaces between the plates promote equilibrium of the vapour pressure, which is very important in the case of many developing solvents.

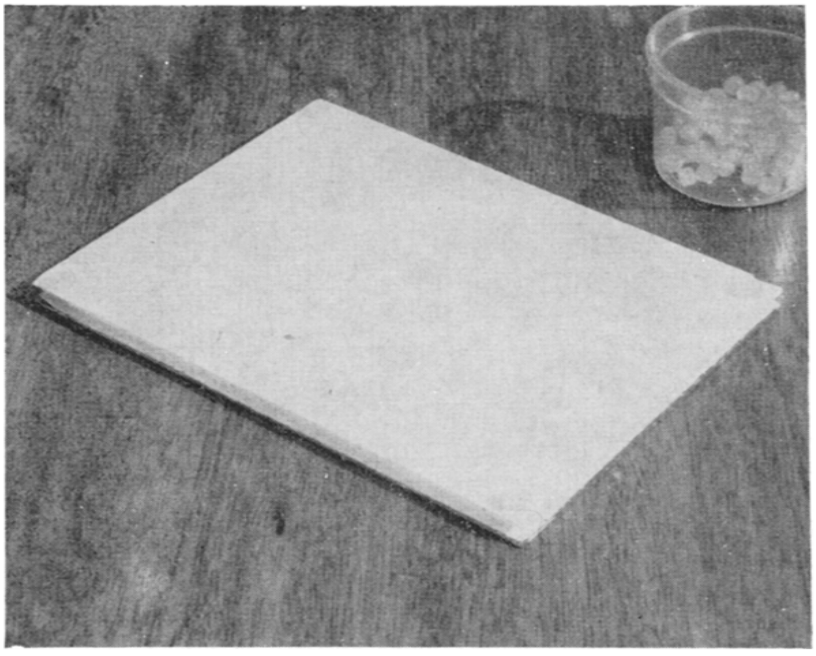

Fig. 2.

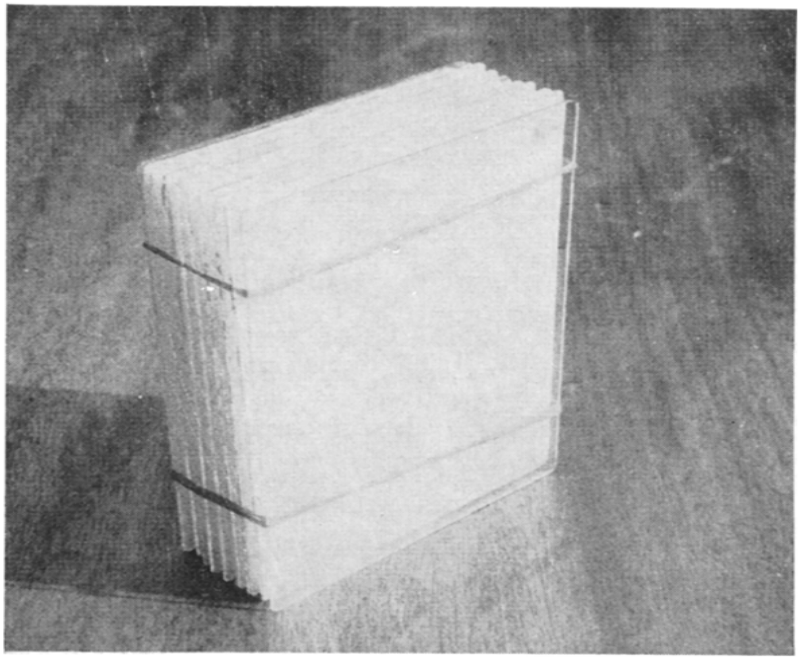

Fig. 3.

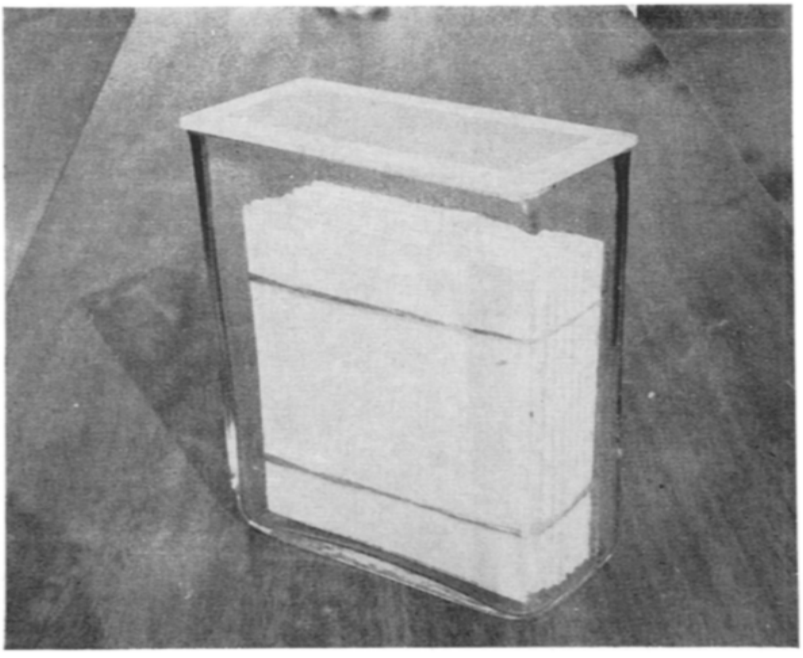

Fig. 4.

If the stacks become very large and heavy, it may be advisable to have two wire hooks for lifting them into and out of the tank. It is evident that the technique is also suitable for the simultaneous development of two-dimensional plates.

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[1] N. NYBOM, *Nature*, 198 (1963) 1229.

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Separation of polyphenyl ethers by thin-layer chromatography

A multiple development technique

During an investigation of the mechanism of the oxidation at high temperatures of polyphenyl ethers, a method was needed for separating the oxidation products. Among the model compounds chosen for study were the following: *m*-phenoxyphenol (I), *m*-diphenoxybenzene (II), bis-(*m*-phenoxyphenyl) ether (III), and *m*-bis-(*m*-phenoxyphenoxy)-benzene (IV).

Initial attempts at separating a mixture of the above compounds by column chromatography on silica gel with various solvents were unsuccessful, so thin-layer chromatography was attempted in hopes of finding suitable conditions for the separation. It was found that a single elution and development of the above compounds with the most suitable solvent system did not give satisfactory separation but that multiple