point in operating at flow rates of less than 0.5 ml./min./cm.^{2}. At flow rates greater than 4 ml./min./cm.^{2} (i.e., 15 seconds per drop from a standard 2 mm. diameter resin bed), the samples accumulated faster than they could be conveniently dried, ignited, and analyzed.

Figure 4 shows the full-width at half-maximum (half-width) in drops as a percentage of the drop number of the peak which was obtained for the elution peak of curium at various flow rates. This relation is valid only for the conditions followed here. Obviously, the conditions could be varied to obtain fictitiously narrow half-widths (for example, if one increases the pH of the eluant during elution).

Effect of Eluant pH. One advantage of ammonium lactate (compared with ammonium citrate) is that the number of drops required to elute a given ion is not a very sharp function of the pH of the lactate solution (because the lactate ion concentration is large and changes slowly over the whole pH range normally used).

The number of drops of 0.4 M lactate of various pH values required to elute yttrium and curium from a 2 mm. diameter resin bed, 5 cm. long, is shown in Fig. 5.

For most purposes adequate separations were obtained with 0.4 M lactate at a pH of 4.5. The heaviest elements, californium, 99, and 100, however, eluted from 5 cm. of resin bed in a rather inconveniently small number of drops at this pH, and better separations were obtained (when the slight extra time was no disadvantage) by using lactate with a pH of 4.10 to 4.20.