ION-EXCHANGE SEPARATION OF THE ALKALI METALS

Sir:

We wish to report preliminary results on the separation of alkali-metal ions by an ion-exchange procedure, using the identical column and resin bed used by Mayer and Tompkins[1] in their 61-Eu separation (1.0 sq. cm. × 10.4 cm. colloidal agglomerates of Dowex-50; 2.83 g. oven-dried resin weight; 8.84 ml. bed solution volume = one V-unit[1]) and a recording counter to assay the relative activity in the effluent solution.

A neutron-activated mixture of 1.0 mg. Na, 10 mg. K, 8 mg. Rb and 13 mg. Cs, in the form of their chlorides, was dissolved in water and absorbed on the hydrogen-form column.[2] Elution was then begun with 0.15 *N* HCl at a flow rate (*ca.* 0.3 ml./min.) slow enough to permit an approach to equilibrium conditions.[1] The effluent from the column was collected in a number of fractions, each of which was radiometrically analyzed for Na^{24}, K^{42}, Rb^{86}, and Cs^{134}.

The results are shown in Fig. 1. The automatically-recorded curve (normalized) is superimposed upon the block diagram and serves to locate the valley between Na and K and the peak of K, both of which occurred while the column was unattended. The table at the top of the figure shows the relative purities and recoveries in the various fractions.

Per cent. of each ion eluted from Dowex-50 with hydrochloric acid.

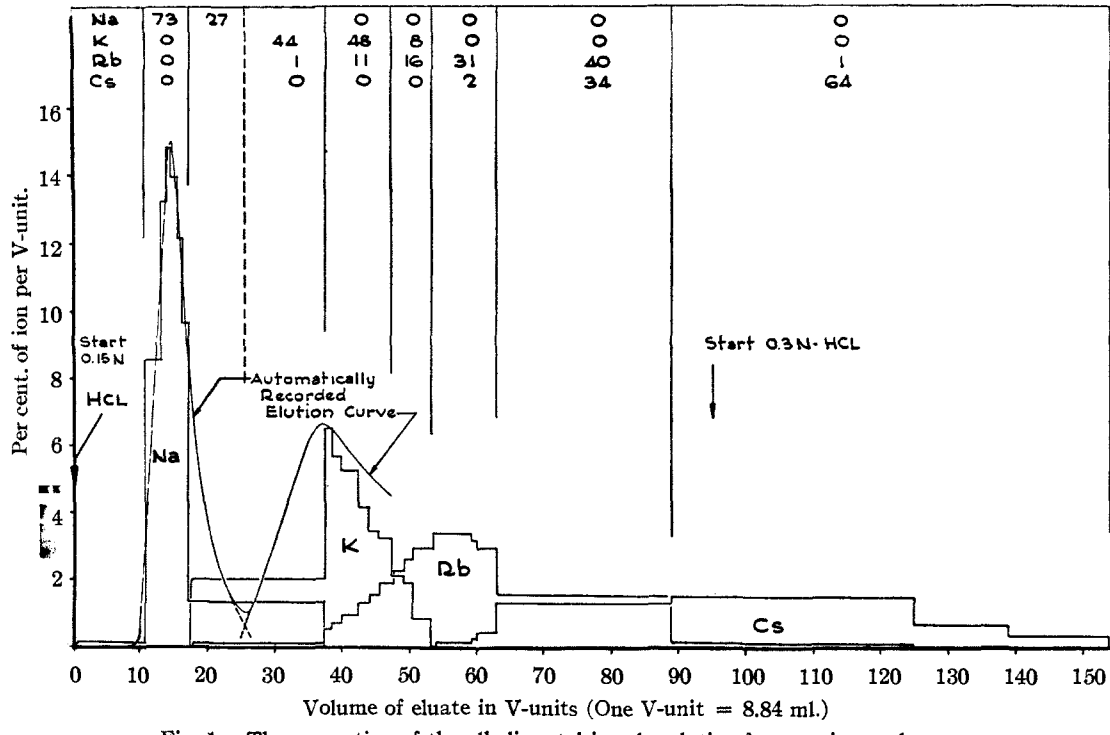

Fig. 1.—The separation of the alkali metal ions by elution from an ion exchanger.

(1) S. W. Mayer and E. R. Tompkins, THIS JOURNAL, **69**, 2866 (1947).

(2) B. D. Polis and J. G. Reinhold, *J. Biol. Chem.*, **156**, 231 (1944).

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