with H^+ form cation resin. The activities were then extracted by elution with a smaller volume of 13 M hydrochloric acid.

DISCUSSION

(a) Oxidation States. The evidence from the tracer experiments concerning the oxidation of elements 99 and 100 is consistent with the view that only the III states of these elements exist in aqueous solutions. The information concerning non-oxidation of element 99 was obtained under conditions resulting in oxidation of americium to the VI state; in the case of element 100 the only evidence stemmed from behavior typical of the III state when the previously described separations were made in aqueous solutions and in the absence of especially powerful oxidizing agents. These data, however, lend support to the view that oxidation states greater than III in aqueous solutions should not be stable for the remaining actinide elements 101, 102 and 103; the additional 5f electrons should be more strongly bound and, in this respect, an increasing resemblance to the lanthanide elements should be evident as the end of the series is approached. The increased resemblance may appear further in the existence of the II oxidation state in elements 102 and possibly 101.

(b) Ion Exchange Behavior. The elution positions of the elements from americium to 100 for various types of ion exchange columns and eluants are summarized in Fig. 8. All five types of elutions show certain common features which are discussed in detail below. It is remarkable that only from Dowex 50 resin with ammonium lactate (or citrate) as eluant do these elements fall in a simple order of atomic