

THE NEW ELEMENT CALIFORNIUM (ATOMIC NUMBER 98)

S. G. Thompson, K. Street, Jr., A. Ghiorso and G. T. Seaborg  
Radiation Laboratory and Department of Chemistry  
University of California, Berkeley, California  
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INTRODUCTION

The discovery<sup>1</sup> of element 97 in December, 1949, was immediately followed by a concentration of effort on the search<sup>2</sup> for element 98. The methods used in the search for these two transuranium elements were similar and the solutions to the most difficult problems in the work on element 97 were directly applicable toward element 98.

All of the experiments completed prior to February, 1950, were unsuccessful for reasons which are now clearly apparent and the present success in this work has been due to relatively recent advances of several types. A very important contribution has been the further development of the systematics of radioactivity,<sup>3</sup> particularly in the region of heavy isotopes. The use of these systematics enables fairly reliable predictions of the half-lives and radiation energies of heavy radioactive nuclides to be made. Advances in the knowledge and understanding of the chemical properties<sup>4</sup> of the heavy elements with improvements in the methods of separation<sup>5,6</sup> were likewise of great importance in making a solution to the problem

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<sup>1</sup>Thompson, Ghiorso, and Seaborg, Phys. Rev. 77, 838 (1950).

<sup>2</sup>Thompson, Street, Jr., Ghiorso, and Seaborg, Phys. Rev. 78, 298 (1950).

<sup>3</sup>Perlman, Ghiorso, and Seaborg, Phys. Rev. 77, 26 (1950).

<sup>4</sup>G. T. Seaborg, Nucleonics, 5, No. 5, 16 (1949).

<sup>5</sup>K. Street, Jr., and G. T. Seaborg, J. Am. Chem. Soc. 72, 2790 (1950).

<sup>6</sup>Thompson, Cunningham, and Seaborg, J. Am. Chem. Soc. 72, 2798 (1950).