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## The Use of Semimicro Apparatus in the First Semester of Freshman Chemistry

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## THE USE OF SEMIMICRO APPARATUS IN THE FIRST SEMESTER OF FRESHMAN CHEMISTRY

JACOB CORNOG

For many years, many colleges have been using semimicro qualitative analysis as the laboratory work of the second semester of freshman chemistry while classical experiments that used standard sized apparatus were used during the first semester. Such a plan has the following disadvantages: each student requires two different sets of apparatus during the freshman year, refitting student lockers at mid-year is an arduous task, the expenses of providing two different sets of apparatus for each student is considerable.

To remedy the disadvantages just enumerated the author has devised a series of semimicro experiments for use in the first semester of freshman chemistry and a single set of apparatus that serves in general chemistry during the first semester and for qualitative apparatus during the second semester. These experiments and sets of apparatus have been used at the University of Iowa with more than 1000 students in three different classes with satisfactory results. This experience indicates that the semimicro experiments are superior to the classical experiments previously used during the first semester. Student interest has increased and the cost of chemicals

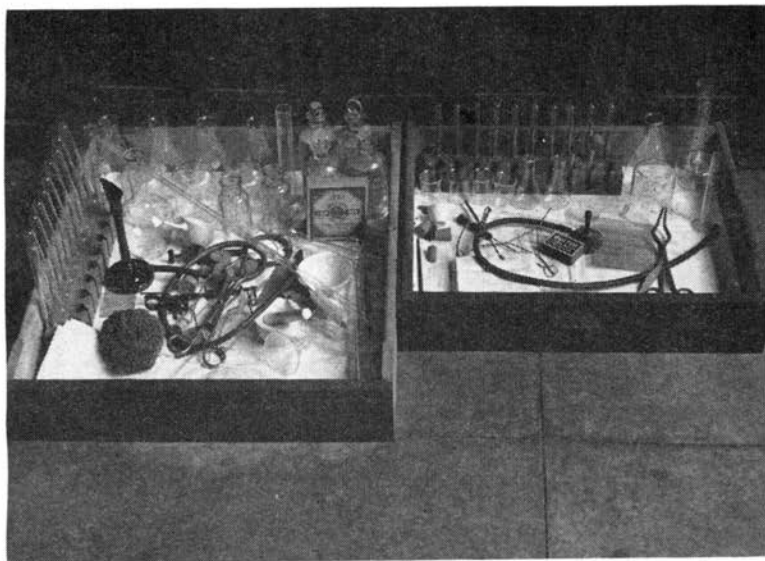


Figure 1, Left, the classical set of apparatus formerly used by each student in freshman chemistry at the University of Iowa. Weight 9 pounds, cost \$9.50. Right, the semimicro set currently used, weight  $4\frac{1}{2}$  pounds cost \$4.50.

and supplies is greatly reduced. As is indicated by the accompanying pictures the new semimicro apparatus sets occupies much less space than the classical set. In fact the semimicro set may all be packed in a cigar box having the dimensions 6"x6"x9", that is everything except the test tube rack. See Figure 2.



*Figure 2. Except for the test tube rack the semimicro apparatus set may be packed in a cigar box having the dimensions 6"x6"x9". The cube is 11" on an edge.*

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