LAB ROBOTS: Q&A

"Star Wars" popularized robots but the R2D2's and the essentially metal-clothed human form are, like Charles Lamb's offspring, Dream Children. Those of us familiar with science fiction know all about these robotic dream children: Capek coined the term robot in his 1920's play "R.U.R", and since then robots have been favorite characters in sci-fi stories. /The term robot appears to be a contraction from the Czech word robotnik, a serf./ Although there are a few toy robots on the market that actually will run about the house performing simple programmed tasks, the main source of such robots is in children's stationery toys. Popular last year were so called transformers, toys that doubled as trucks, for example, and which could be turned inside out /transformed/
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into a robot. But this is not to say that robots aren't being used in industry and in the lab because they are. They are just different types of robots. The auto industry uses many robotic welding machines, for example, and sales of such robots increase each year.

A few papers describing the use of lab robots began appearing a few years ago. At our Analytical Chemistry Conference in 1984 we listed robotics as one of the topics, and were pleased to receive enough contributed papers to make a session. Suprisingly these papers described the use of lab robots in a number of different industries, including, of course, radiochemical applications. We seemed to have anticipated a trend, for in 1985 two leading magazines that report on the Pittsburgh conference both chose robotics as the theme of their write-ups. Science\(^1\) headlined its lead article, "Robots Automate Sample Preparation", while Analytical Chemistry\(^2\) used the title, "Year of the Robot". All this presaged big things for lab robots, but none of them made the 1986 Modern Trends Conference. One would think they would be ideal for working with hot samples.

The Analytical Chemistry Division at ORNL purchased a lab robot a few years ago. The Zymark instrument we bought was an arm with accessories. After spending some time checking it out and getting to know it, an assignment was made to have it prepare samples for liquid scintillation counting. This involved putting the scintillator in vials and adding sample. The people doing this work found very quickly that programming a robot to do even this simple task was time consuming and demanding. For example every thing had to be firmly fixed in position, otherwise a slight movement would botch-up the batch operation. The trials and tribulations of this work were reported at the