COMPUTER ENHANCED CHEMICAL EDUCATION:

ANY COMPUTER CAN BE USED

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During my formative years as an Assistant Professor of Chemistry, I had heard a great deal about computers in Chemistry. Under the influence of Peter Lykos and Audrey Companion, OCPE, CONDUIT, NCECS, and later PLATO, became familiar names; I had also heard of Harrison Shull, Joe Lagowski, Al Lata, Ron Crain, Ron Collins and Stan Smith, among others. Yet, except for occasional contact at a professional meeting, I did not know these men, and I had not seen, first hand, examples of their work.

In due time, I ascended to the rank of Associate Professor and, befitting my new status, I began to search for ways to increase my productivity as a Chemist and as an Educator. It was time to become computerized.

For some time we had been using low speed terminals in the chemistry building for data entry and file manipulation at the computer center some three (often cold) blocks away. Quite naturally (or so it seems to me today), I developed an interest in applying those terminals to educational projects. I needed appropriate
software. I could, of course, write my own programs. I could also grope around in the literature—which is exactly what I did until I discovered how difficult it can be to recognize an appropriate program, identify the author and procure a working copy.

At about this time, Audrey Companion returned from The Conference on Computers in Chemical Education, Kingston, Ontario with the realization that people in our position—people who have a computer (any computer) and who know how to use it—need programs. Not tested, guaranteed transferable and certified programs (though that is certainly desirable), but ideas set down in one or another programming language and available right now.

It seemed to me that we should be able to accomplish this end rather easily, and at next to no cost. It also occurred to Bill Hayles that we could do as much and in the summer of 1974 Bill began setting up a cooperative program exchange which became known as ORGX. I shall describe this organization in some detail; as an organization it is not particularly interesting, but from it we have gained substantial insight into the needs of the user community, the nature of programming in chemical education, and the requirements for a successful program exchange.

**ORGX**

Bill Hayles began, in the Autumn of 1974, circulating letters describing his proposed cooperative computer program and information exchange. Bill always emphasized that this was to be a cooperative venture, that respondents were to send no money. What ORGX wanted from potential participants was a name, complete address, a description of the available computer and mode of access, a keyword identifying interests within the framework of educational computation for chemists, and a volunteer code.

It's worth a few words to describe the information Bill requested in some detail; one might wonder, for example, why he wanted to know about computer manufacture. It is relatively easy to look through the ORGX file today, and learn quite a bit about the people who are interested in exchanging programs and information.

First, there are about 150 listed participants, mostly from the United States and Canada, but representing Spain, the UK, and Australia, among other places. The schools represented are not only the large, recognized leaders in computers and/or chemistry (though they are all represented) but also the smaller schools generally regarded as liberal arts colleges, with some representation among secondary schools as well.

Participants do, in fact, use any available computer. For example, six participants use Hewlett-Packard equipment, 32 use Digital Equipment Corporation Computers (including 15 PDP8 series machines), 12 use UNIVAC, 57 use IBM (including four 1620's and one