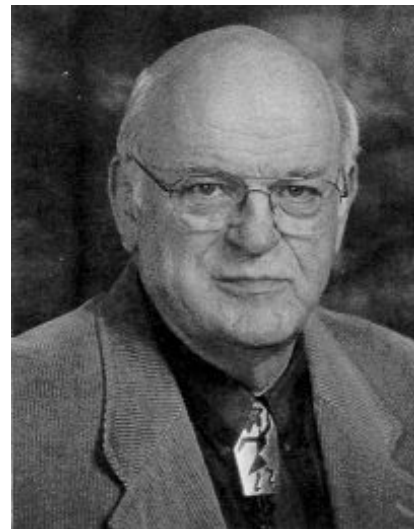


## ROBERT D. FREEMAN AWARD OF MERIT FOR SERVICE

Shortly after I was informed that the Executive Council planned to recognize my 14-year tenure as Production Editor (PE) of the *Proceedings of the Oklahoma Academy of Science (POAS)* with an Award of Merit, I asked the Editor if he would consider, in lieu of the usual biographical sketch of an Awardee, a description of the trials and tribulations of a PE during the transition from “no computers” to “complete computerization”. He agreed, probably so he wouldn't have to write the biographical sketch. This is that description. In many places I use “we” or “our” to refer to me and my secretaries - Janna Garner, Terri Kreth, Lee Freeman, Lisa Roper, Judy Weaver - without whom most of these activities, especially the earlier ones, would never have been attempted, much less accomplished.

My “appointment” as the First PE of *POAS* happened in an extremely round-about, if not bizarre, way. Some background information is needed. My introduction into the world of editing and publishing occurred in 1976 when I volunteered to take over from Professor Edgar Westrum, University of Michigan, as Editor of the *Bulletin of Chemical Thermodynamics (BCTHD)*, a 500-page annual index to the world-wide literature on thermodynamics and thermodynamic data. I did so under the illusion that I would be able to obtain considerable help in printing and publishing from the OSU Press; upon discovering that the OSU Press existed in name only, I was forced to recognize that I was also the publisher of *BCTHD*. This role as Editor and Publisher of *BCTHD* lasted until 1990.



Much of the information published in *BCTHD* was processed by a group at the National Bureau of Standards (NBS) using computer programs written specifically for the purpose, and, in 1969-78, printed by a special, one-of-a-kind, impact printer built for this group. In 1979 this special printer died; for several years thereafter, NBS sent material on magnetic tape to a commercial phototypesetting service in downtown Washington; the typeset sheets were shipped to us and became original pages (camera-ready copy) that went to the printer.

In the period 1977-79 the material prepared in my office for *BCTHD* was, initially, simply typed on an electric typewriter; later, we learned about, and rented for 1 or 2-month periods, electric typewriters with memory, i.e., the keystrokes were recorded on magnetic tape. This memory feature enabled one to make corrections without having to retype an entire page and was a significant improvement. In 1980, with NBS sending material to the commercial typesetter, we made an expensive effort to have the entire book typeset by sending the portion generated in my office (paper copy) to OSU Printing Services (OSUPS) for typesetting; the quality was excellent but the cost was rather steep for our limited budget.

In mid-1982 we acquired our first desktop computer - Z80 CPU at 6 MHz, 64 kB RAM, two floppy drives, no hard disk, CP/M operating system - and a dot-matrix impact printer. This was the year after the appearance of the IBM PC and two years before the Macintosh. Within a few weeks, we had established telecommunication with the OSU main-frame computer(s), using, as I recall, campus-provided multiplexers, the forerunner of the current fiber-optic OSU Network.

In our discussions with OSUPS about typesetting our material for *BCTHD*, we learned that it was possible to embed type-

setting code in digital files and transmit those files to the OSUPS phototypesetter, thereby bypassing the re-keyboarding required for the previous volume. As soon as the new desktop computer was up and running, we started to learn how to input this typesetting code, and soon had a small but representative file ready for a test run. Upon checking with OSUPS for particulars about transmitting the file, we learned that they had never actually “executed” this process, and in fact, although they had “installed” a multiplexer connection to the main-frame, it had not been activated and they had never transmitted files to/from another computer. After I assured them that we were indeed serious about transmitting files for typesetting, they had the multiplexer activated, but they could communicate only with the main-frame; consequently, we transferred our files to a specified location in the main-frame, called OSUPS to tell them that the file was ready, and they downloaded the file and ran it through the typesetter.

We were not surprised that the result from the first test file showed a variety of relatively minor errors; it also showed that we were very definitely on the right track with our coding and that “remote typesetting” - transmitting digital files with embedded code - was indeed possible and, in fact, a quite reasonable solution. Many of the OSUPS staff had been quite skeptical of our proposal to do our own “remote typesetting”, and were honestly astounded by the output from that first test file.

There is an interesting sequel to this story about “remote typesetting” at OSUPS. For many years the OSU Catalog had been typeset and printed at OSUPS. At some point, the people responsible for the content of the Catalog decided that the content should be stored in digital form (disk or tape) and {revised} each year, rather than starting from scratch each year. The hitch in this plan was that OSUPS had no way of reading magnetic tape or of converting the digital files into properly coded typesetting files. Consequently, the digital file(s) containing the Catalog were being sent on magnetic tape to a commercial typesetting service in OKC. After our success with transmitting files coded for typesetting, OSUPS used our files as guides and we provided further assistance in developing the codes needed for processing the Catalog files. Within a short time, the Catalog was being typeset again at OSUPS, using virtually the same scheme we had developed for *BCTHD*.

In the early '80s responsibility for processing *BCTHD* material at NBS was transferred to a different group; after processing material for a couple of issues, this new group became interested in transferring to my office as much as possible of the processing and the preparation of camera-ready copy. To this end, they provided funds for a new, more powerful computer: 68000 CPU at 10 MHz, FPP, 1 MB RAM, 33 MB disk, streaming tape drive, 5.25 in floppy drive -at a cost of about \$12,000 (that's not a typo!). We acquired this computer in the Fall, 1984, and in March, 1985 [as soon as they became available for this machine], installed Unix and the Emacs editor. We still did not have a “typeset-quality” printer and still transmitted files to OSUPS for typesetting; in all other respects the new computer was a dramatic improvement.

It was in this period, 1984-85, that I became involved with *POAS*. Otis Dermer, who has worn many OAS hats (President, Editor, and long-time Associate Editor) in the 60-odd years that he has been at OSU, was then Head of Chemistry, and naturally became familiar with my activities and the resulting volumes of *BCTHD*. He was apparently sufficiently impressed with our operation, or was sufficiently unhappy with the then-current *POAS* production, or was sufficiently provoked by some combination of the two, that he needled Glenn Todd, then Editor, into discussing with me the possibility of my office producing *POAS*. We agreed to give it a try, and I thereby became the de facto Production Editor; the “official title” came later, in part because there had never been a PE. In fact, I essentially appointed myself: after we had produced a couple of volumes and it appeared that we were likely to continue, I thought that there should be some recognition of the work we were doing and asked Glenn Todd if he had any objection to putting a “Production Editor” line on the title page; he didn't; I never asked whether he later consulted with the Executive Council.

Our first volume of *POAS* was number 65 which appeared in 1985. We received

marked-up paper manuscripts from the Editor, keyboarded the material into the computer, simultaneously coding for typesetting, and transmitted the file to OSUPS for typesetting. Given this background information, one may find it interesting to compare volumes 64 and 65, and to note in particular the papers on pages 39-43 and 73-78 of the latter volume.

In 1986 we finally got fully equipped for what has become known as “desktop publishing.” In March we obtained an HP LaserJet Plus printer - the second model that HP produced - for just under \$3000. In April we obtained typesetting software that covered the gap between the Unix program ‘troff’, which coded a file for typesetting, and the software internal to the printer. Unfortunately, the LaserJet came with atrocious internal fonts, and without downloadable fonts. HP remedied that in August, with more downloadable fonts in January 1987.

Over the years there were, of course, updates to various software and various modifications to the computer (another 1 MB of RAM; a dual-drive, 20 MB Bernoulli Box [operationally, an early Zip drive]; later, a second, 68 MB, disk, etc.), but the basic scheme implied in the preceding paragraph - the computer described above, Unix, Emacs editor, troffcoding, ‘Tplus’ typesetting software, HP LJ+ printer - served from 1986 to 1997, when I finally bit the bullet and ‘went modern’: a Power Macintosh and an HP LJ6MP printer.

The current software is the ‘OzTeX’ implementation of TeX/LaTeX; OzTeX is shareware for the Mac. TeX is the package designed by Donald Knuth to simplify the typesetting of his series “The Art of Computer Programming”; LaTeX is a more user-friendly version that is widely used for technical publications, e.g., those published by American Mathematical Society and American Institute of Physics. Input for OzTeX is generated with ‘Alpha’, an excellent shareware editor designed to work closely with LaTeX. A major reason for the choice of LaTeX is the facility with which one can typeset mathematical and chemical formulas and equations, and create tables of nearly infinite variety; however, the facility of creating tables, although marvelous, is sometimes severely taxed by the creativity of *POAS* authors. Volumes 77 and 78 of *POAS* were produced with this ‘modern’ hardware/software combination.

### **Processing Manuscripts**

Initially, we received from the Editor paper manuscripts with editorial mark-up by the Editor and Associate Editor; all of the content except figures was typed into the computer by my secretary, who simultaneously entered appropriate typesetting code. I proof-read on-screen and made corrections. Pages (“galley proof”) were printed for the Editor and the author(s) to use in making final corrections; after those corrections were received and made, and after page numbers could be assigned, the final version (camera-ready copy) was printed, on the LaserJet, for delivery to the printer in Michigan.

After I retired from the department and no longer had a secretary, the manuscripts were typed into a computer, *without* typesetting code, at a local secretarial service, and delivered to me on floppy disk. After reading the files into my computer, I entered the typesetting code and proceeded as before.

As desktop computers became widely available, and as more authors used them to prepare manuscripts, it became obvious that considerable time and expense could be saved by asking authors to submit the final version of the manuscript on floppy disk, from which the file(s) could be read into my computer for the addition of typesetting and formatting code. This option has been available for several years and has now become routine for authors.

It was not so routine on the processing end. The Unix-based computer that was purchased in 1984 - only a few months after the Macintosh was introduced - was incapable of reading Mac or PC floppies. The solution was to take the author's floppies to the OSU Computer Center, read the disk into a PC or Mac, as appropriate, transfer the file over the OSU Network to my directory on the OSU CC Unix machine, from which I would transfer the files to my computer by modem. Awkward, but it worked, and was much faster, much cheaper, and much less susceptible to error, than retyping. Of course, an occasional author would submit a disk

prepared with an ancient word processing program that the OSU CC had no way of reading/translating. After installation of the PowerMac in 1997 most of these problems disappeared; it can also read PC disks and, with appropriate software, can translate most word-processor files to ASCII, the format desired for entering typesetting code. Unfortunately, there are still occasional problems with translating a particular file, especially tables.

### **Printing and Binding**

Our first volume of *BCTHD* was printed in Edmond and bound in Tulsa, primarily because I then thought that it would be advantageous to have easy access to the printer in case of problems. After that learning experience, all subsequent volumes (21-28), and fourteen volumes (65-78) of *POAS*, were printed and bound by a printer in Michigan, who had done work for the previous Editor of *BCTHD*. The reasons for this choice were simple: the printer did high quality work, was easy to deal with, and produced the books at a cost significantly lower than that quoted by every Oklahoma printer I could find.

Cost control was always a matter of concern to the Executive Council and to the Executive Secretary-Treasurer. Comparing the cost of producing *POAS* from year to year was difficult because the number of copies varied and the number of pages per volume varied. At some fairly early stage, I decided that the only reasonable way to make the comparison was to calculate the cost per individual page:(total cost for producing a volume) divided by (number of copies times the number of pages per copy). For the three years before I began, the cost per page was 7.52, 7.93, 9.13 cents, based on information provided by Glenn Todd. For our first volume the cost was 8.09 cents; since then the cost has been below 7 cents per page for eight volumes, between 7 and 8 cents for four volumes, and 9.01cents for one volume. The volumes with the higher cost per page are those with fewer pages (80-96), or those for which fewer copies were ordered (600-700 versus 1000-1200), or both; both of those variables are outside the jurisdiction of the PE.

### **Epilogue**

I was supposed to receive this Award at the OAS Annual Meeting in Tahlequah in November, 1998. Unfortunately, while my wife and I were on our way from Stillwater, our faithful vehicle failed us for the first - and only - time in its eleven, now twelve, years and, at Sand Springs, we had to turn back toward home. Therefore, I am delighted to have this belated opportunity to thank the Executive Council and the Academy for the Award and for what I hope is recognition of the importance of a Production Editor in "...diffus(ing) among the citizens of the State a knowledge of the various departments of science..." and doing so with a publication of which the members of the Academy can be justly proud.

### **Very Brief Biographical Sketch**

Born in Nicholson, Jackson Co., GA, 1930; B.S. from North Georgia College, Dahlonega, 1948; M.S. and Ph.D. from Purdue University, 1952 and 1954; for all degrees, major in chemistry, minors in math and physics. Physical chemist, Goodyear Atomic, 1954-55. Joined OAMC as Assistant Professor, 1955; retired from OSU as Professor, 1988. Founder and Chairman, 1965, of Midwest High Temperature Chemistry Conference (now MHTSSCC; SS = Solid State). Visiting scientist, Lawrence Livermore Lab, Summer, 1966. Consultant, Argonne National Lab, 1967-69 and 1979-1981. Visiting Scholar, University of Illinois, 1970-71 under NSF grant to RDF. Visiting Scientist, National Bureau of Standards, 1980-81; Member, Commission on Thermodynamics, International Union of Pure and Applied Chemistry, 1977-89 (apparently the only Oklahoma chemist ever to serve on an IUPAC commission/committee/council/task group).

*Robert Freeman*  
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