Computers in Chemical Education Newsletter

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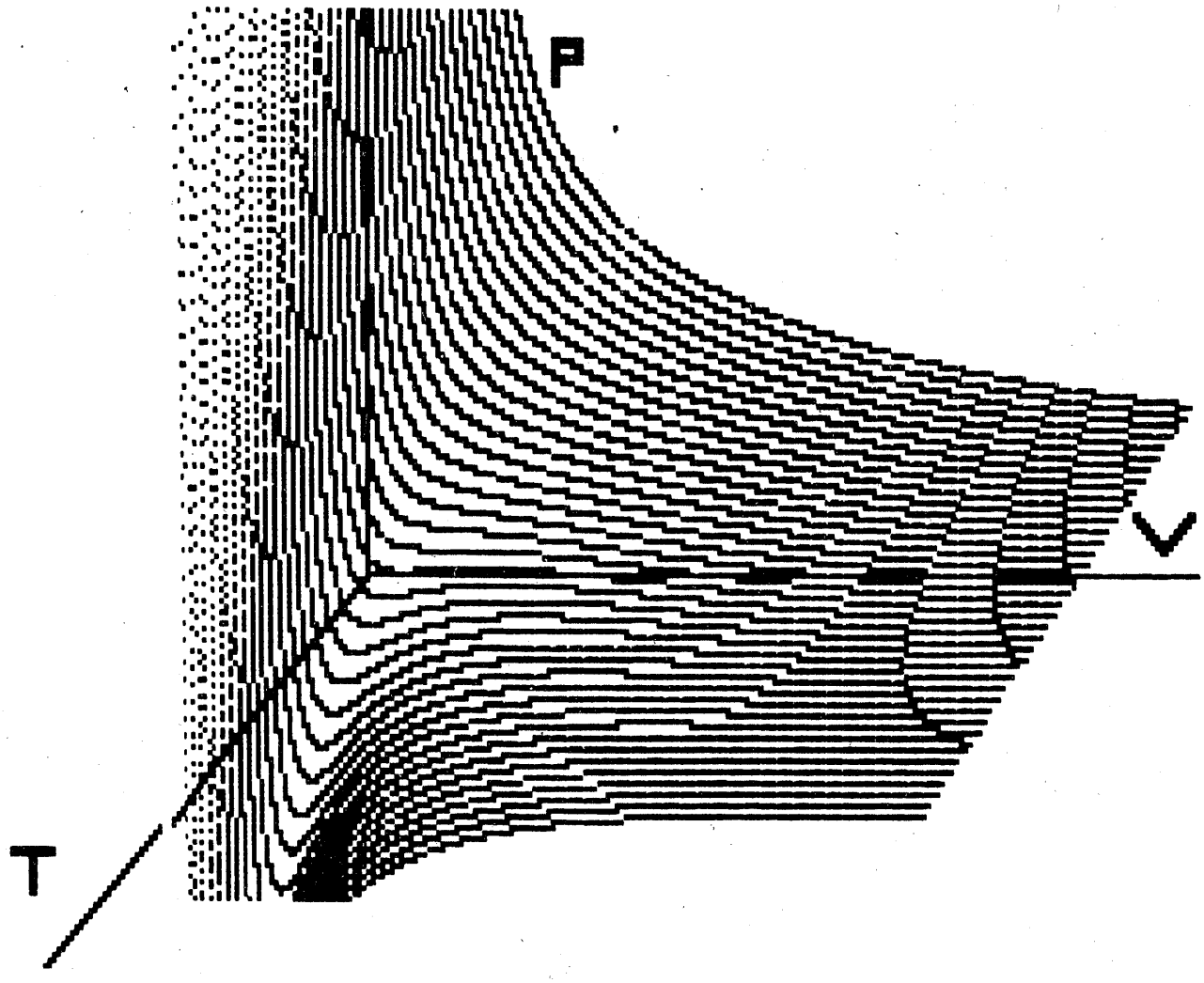

VAN DER WAALS EQUATION

ON THE COVER

Dr. John H. Wise (Department of Chemistry, Washington and Lee University, Lexington, VA 24450) won first prize in the Computer Graphics Contest held at the "Eighth Biennial Conference on Chemical Education" held at the University of Connecticut in August. The figure entitled Van der Waals Equation was generated using an APPLE II+ with a Gemini 10 printer. The program was written in Applesoft BASIC. Professor Wise submitted a number of graphic figures. He uses many of these to enhance his lectures.

MESSAGE FROM THE CHAIRMAN

If any of us were ever in doubt whether the time we spend puttering with our computers is time well spent, we need look no further than the October issue of the Journal of Chemical Education for some strong support and encouragement.

From Tom Lippincott and George Bodner, page 844, "...We must go beyond textbooks and lecturing in our classes. Computer techniques can be used to substantially improve on certain aspects of what textbooks do, and they can also be used to replace many of the less creative components of lecturing... What we need now are 100 geniuses to dedicate the next 20 years of their lives, each one to a different aspect of our mission."

Or in the next article, a summary of the ACS Chemistry Education Task Force, page 846, "The U.S. Government should expand its role as a major supporter of R&D in the use of computers...in science education."

And again, in Dr. Johnstone's article "New Stars for the Teacher to Steer By", "Computer Programs...here we have a technique in search of a use. So much of the software does little more than could be done with a pencil and paper and possibly a pocket calculator... Where programs could make a unique contribution to chemical education, would be in a noise-reducing role... Strategies have to be built up and practiced. These and many others are begging for the ingenuity of those with computing skills."

To me, the message is quite clear - computers continue to offer tremendous potential as instructional tools and we are still just scratching the surface.

Thinking about all of this, I asked myself "When was the last time you did something 'creative', that is, sat down and assembled a program that did something unique?"

Quite honestly, I didn't like the answer, so I decided at that moment to put other obligations aside and work on the "special" topic I've had kicking around in the back of my mind for the past several months. It's not a revolutionary, earth-shaking program; in fact it's not at all sophisticated, even though it took up most of the weekend to get it far enough along to see whether it was really going to work. And I think it will.
In my definition, a program works if it can help my students get more out of the time they spend on chemistry.

I'll know more about its usefulness next summer because I'm going to use the rest of the year to test it out. Check with me at the Workshops at Clarkson University or at the meeting in Montclair and I'll give you a copy of it if it does!

Isn't it time YOU stopped and took a few days off to breathe some life into that nifty idea you've been carrying around in the back of your mind for the last year or so? If we don't do it, who will? Maybe the government will find those 100 geniuses and fund them for 20 years. But I doubt it.

COMMENTS FROM THE EDITOR

The Biennial Conference on Chemical Education held at the University of Connecticut last August was attended by approximately 1,000 persons. Computer-related papers, poster sessions, workshops, exhibits and other activities were included in the program.

Project SERAPHIM sponsored a software exhibit and a program contest. In addition to the entries in the 1984 program contest, commercial and project SERAPHIM software was available for inspection. Winning programs in the contest were "Mineral Resources" by David Wishnant, Wofford College, Spartanburg, SC;"Element Search" and "Chemical Search" by David Olney, Lexington High School, Lexington, MA; "Refinery" by Tamar Y. Susskind, Felino Pascual and Martin Rose, Oakland Community College, Auburn Heights, MI; "Conformational Analysis and Molecular Modelling" by Mun-Yee Yue, Kok-Yan Leung and Albert W. M. Lee, Hong Kong Baptist College; and "Data Collection/Retrieval System" by John K. Estell, Maumee, OH. These and other contest entries will be distributed as Project SERAPHIM disks. Please write Dr. John W. Moore, Department of Chemistry, Eastern Michigan University, Ypsilanti, MI 48197 for details.

The Computer Graphics Contest entries were displayed at the meeting and judged by Paul Cauchon, John Moore, Scott Owen and myself. The contest was sponsored by the C.C.C.E. First prize went to "van der Waals Equation" submitted by John H. Wise, Department of Chemistry, Washington and Lee University, Lexington, VA. His winning entry appears on the cover of this issue of the Newsletter. Second prize was awarded to "Myoglobin" submitted by Charles E. Ophardt, Elmhurst College, Elmhurst, IL. The honorable mention winners were "Aureomycin" by Mike Davis, Department of Organic Chemistry, La Trobe University, Bundoora, Australia; "Indole" by Magdalena E. Wojciechowska, Troy State University, Troy, AL; and "Bragg Diffraction from Parallel Planes" by S. Z. Lewin, Department of Chemistry, New York University, New York, NY. All these entries were in the microcomputer category. First prize in the mini and larger computer category went to "3d Orbital" by John H. Wise. These winning entries will be displayed in future issues of the Newsletter.

A birds-of-a-feather session on computers in chemistry was held during the meeting. This was attended by Paul Cauchon (C.C.C.E. Chairman), John Moore (Project SERAPHIM), Joe Lagowski (J. Chem. Ed. and Project SERAPHIM), members of this Newsletter staff, members of C.C.C.E. and other interested chemistry teachers. One of the subjects discussed was how best to handle software and hardware queries. It has been obvious that this Newsletter is not an ideal vehicle for this purpose. Someone submitting a query would like an immediate response. A query may not appear for three months after its submission and a response may take another three months or longer. A suggestion was to establish an electronic bulletin board or network to which queries and responses could be submitted. It was further suggested that such queries and responses should be stored in such a way that responses to earlier questions could be retrieved when similar queries are received. Responses could be updated and improved. Ken Ratzlaff (who was not at Storrs) has discussed this matter with me. The ACS Division of Computers in Chemistry (of which Ken is Chairman) is interested in establishing a network. I asked Ken to write an article describing some of the possibilities.(This appears elsewhere in this issue.) I believe that an inexpensive rudimentary beginning should be made very soon. Members of the C.C.C.E. and other "experts", as well as anyone wishing to contribute, would provide answers to queries. In my opinion the network should include topics other than computers which are of interest to chemical educators. If you have suggestions or are willing to work on such a project, please contact Ken Ratzlaff or Paul Cauchon.

A meeting of the C.C.C.E. was held at Storrs. The National Workshops, which have generally been held every other year, were discussed. In 1983 two very successful National Workshops were held. It was decided at Storrs that the demand for these justified trying to hold them each year. Eastern and western or northern and southern workshops might be held. A Workshop - East has been scheduled for 1985 (see detailed information elsewhere in this Newsletter). Any school having substantial computing facilities and interested in hosting such workshops should contact Paul Cauchon.

The Newsletter was discussed in some detail at the C.C.C.E. meeting. Newsletter subscriptions have grown considerably. The number of Newsletters printed has increased from about four hundred to two thousand. The cost has increased proportionately. The size of each issue and the frequency of publication is constrained by the budget. It is no longer realistic to expect the Division to subsidize the Newsletter. Project SERAPHIM has repeatedly provided additional financial support. The subscription list will be updated for the September 1985 issue and it was decided to institute annual charges of $2.50 per year for a domestic subscription and $5.00 for overseas mailings. This represents the average cost per subscription of preparing, reproducing and mailing the Newsletter. A subscription renewal form appears in this Newsletter.

Best wishes for 1985!

Software QUERIES and REPLIES

Software QUERIES and REPLIES should be sent to Ken Loach, Department of Chemistry, SUNY at Plattsburgh, Plattsburgh, NY 12901, (818) 564-2230.

SQ-25 (Dec. '84)

F.A.J. Loos of the Delft University of Technology has written to announce that his chemical engineering department has begun to organize an inventory of CAI programs on the following topics: fluid mechanics, heat and mass transfer, laws of conservation, flow equations, diffusion, conductance, chemical bonds, spectroscopy, quantum mechanics, thermodynamics and gas kinetics. These would be used in the first-year curriculum. He would very much like to hear from anyone with suitable CAI programs. The address is: ir. F.A.J. Loos, Ondervijskundige Dienst, Technische Hogeschool Delft, Mijnbouwplein 11, 2628 RT Delft, The Netherlands. (K.L.)

WHO DONE IT?

WHO DONE IT? information should be sent to the appropriate section editor (Hardware or Software - see QUERIES).

WHO-100 (Dec. '84)

L.J. Soltzberg (Simmons College, Boston, MA 02115) has just published a package of 8 programs called "Computer Assisted Blackboard" (available through Houghton Mifflin, Boston). These programs allow the drawing and display of diagrams, processes and results on a large-screen projector or a wall-mounted video monitor, for real-time lecture displays. (K.L.)

WHO-101 (Dec. '84)

J. Saffir has a useful article in the November issue of Computers and Electronics on the printing of graphics, icons and varied type-fonts on dot-matrix printers. The article lists and discusses briefly 29 software packages, with prices and sources. (K.L.)

WHO-102 (Dec. '84)

J. Smith-Richardson has an article in the same issue (see above) on 9 hardware and software products that can be used to transfer data between microcomputers of different brands, or to read and/or write disks of one format on a microcomputer using a different format. (I.O.)

WHO-103 (Dec. '84)

At the ACS National Meeting in Philadelphia, PA in August 1984, the following papers were presented in the area of chemical educational computing:

W. Unkel (Department of Mechanical Engineering, MIT, Cambridge, MA 02139): design of a new software system for general purpose instrumental interfacing; suitable for use in research and undergraduate teaching.

W.B. Dixon (Chemistry Department, SUNY, Oneonta, NY 13820): interfacing of a PDP-11 (RT-11) to a Cary-14 spectrometer for spectrophotometry or kinetics.

S.S. Zimmerman (Chemistry Department, Brigham Young University, Provo, UT 84602): simulation of molecular dynamics and enzyme kinetics of myoglobin and haemoglobin, with animated displays on an Apple II microcomputer.

J. Bowden and G.S. Owen (Chemistry Department, Atlanta University, Atlanta, GA 30314): CNDO/INDO valence electron molecular orbital calculations for up to 40 atoms, on an IBM-PC in Microsoft Fortran. (K.L.)

WHO-104 (Dec. '84)

At the ACS Southeastern Regional Meeting at North Carolina State University in October 1984, the following papers were presented in the area of chemical educational computing:

V.I. Bendall (Chemistry Department, Eastern Kentucky University, Richmond, KY 40475) and W.P. Halpern and J. Gurst (Chemistry Department, University of Western Florida, Pensacola, FL 32504): a three-paper symposium on the writing of chemical educational software.

V.I. Bendall (address above): Apple II simulations of electrolysis and of bomb- and ice-calorimetry.

H.M. Bell and R. Lowry (Chemistry Department, VPI, Blacksburg, VA 24061): simulations in Commodore 64 Basic of titration, Charle's Law, Boyle's Law, radioactive decay and mass spectroscopy, and molecular-perspective displays.

H.H. Carmichael (Chemistry Department, North Carolina State University, Raleigh, NC 27695): two games providing drill in units, electrolytes and reactions.

T. Cassen (Chemistry Department, University of North Carolina, Charlotte, NC 28223): graphical demonstrations of the VSEPR approach to the geometry of central-atom molecular bonds, and on the limiting-reagent concept in stoichiometry.

S.L. Cooke (Chemistry Department, University of Louisville, KY 40292): a comprehensive laboratory data-analysis program (ULTIMA) for the IBM-PC, with column-wise operations including entry, display, storage, retrieval, editing, smoothing, differentiation, integration and plotting.

J.E. Danieley and M. Lowder (Chemistry Department, Elon College, Elon College, NC 27244): a chemical stockroom inventory program in Apple IIe Basic.

A.F. Griesser and F.T. Prochaska (Chemistry Department, Western Carolina University, Cullowhee, NC 28723): interfacing a Beckman 4260 IR spectrometer to an Apple II+ (DOS 3.3) with a Mountain Computer A/D + D/A board (MHP-X023); spectra can be collected in single or repetitive scan with subsequent plotting and display.

K.D. Oliver, L.H. Arney and F.T. Prochaska (see above address): displays of 2D and 3D H-atom wavefunctions in a "dot-density" format on an Apple microcomputer.

T.W. Hall (Wingate College, Wingate, NC 28174): interface of a Spectronic 2000 spectrophotometer to a Tektronix 4054 microcomputer with an RS232C interface; the stored spectra can be compared, resolved and displayed.

P. Henagan and J.H. Reeves (Chemistry Department, University of North Carolina, Wilmington, NC 28403): interface of a potentiostat to an Apple IIe microcomputer, with application to fast and slow cyclic voltammetry, chronoamperometry and chronocoulometry.

G.L. Long (Chemistry Department, VPI & SU, Blacksburg, VA 24061) and J.D. Winefordner (Chemistry Department, University of Florida, Gainesville, FL 32061): a program for the calculation of the correct limit of detection (by the IUPAC definition) from trace analysis data.

W.L. Switzer (Chemistry Department, North Carolina State University, Raleigh, NC 27695) and W.A. Pizer (North Carolina School of Science and Mathematics, Durham, NC 27706): adaptation of Project Seraphim general chemistry CAI programs to common conventions of input/output, significant figures, rounding and student-directed messages.

W.L. Switzer (see above address): three programs for simulation and display of countercurrent extraction separations, on an Apple II microcomputer.

M.J. Pearce and C.B. Boss (Chemistry Department, North Carolina State University, Raleigh, NC 27695): programs and experimental results for the multiparametric optimization of the conditions of atomic absorption spectrometer operation, using the signal/noise ratio as the optimized variable.

M. Reichman, R. Plant and G.G. Long (North Carolina State University, Raleigh, NC 27695): CAI programs for introductory chemistry (on symbols for the elements Lewis structures and the Aufban principle) using graphics and a game-strategy.

C.R. Ward (Chemistry Department, University of North Carolina, Wilmington, NC 28403): a simple statistical/data-analysis program (PROSTAT) for Radio Shack or MS-DOS microcomputers.

D.M. Whisnant (Wofford College, Spartanburg, NC 29302): computer simulations suitable for the demonstration of experimental principles and scientific information gathering for non-scientists. (K.L.)

WHO-105 (Dec. '84)

The Blacksburg Group is collecting useful scientific and engineering programs and subroutines for a book. The Group is looking for programs on graphing, numerical analysis, statistics, equation solving, 3D plotting, and programs which control real-time clocks, analog converters, etc. All programs which could be used by scientists and engineers to answer specific or general needs are of interest. This is an opportunity for you to share your pro-

grams with others. The publishers are particularly interested in BASIC-language programs for desk-top computers. Appropriate acknowledgement will be made in the book and the authors will retain the copyright to their material.

Those wishing to contribute materials should write or phone Dr. Jonathan A. Titus for guidelines and other information. The address is The Blacksburg Group, P. O. Box 242, Blacksburg, VA 24060. The phone number is (703) 951-9030. (D.R.)

WHO-106 (Dec. '84)

In recent years the Chronicle of Higher Education has frequently published articles about computing in higher education. A listing of some new software for the college and university market appeared in the September 5, 1984 issue (p. 27). The publication will periodically describe such software. If you would like your reliable and tested software listed in this publication, the following information must be provided:

> What it is called, what it does, how much it costs, when it was published, what machine it runs on, what special equipment those machines need, your name, address and phone number and the name and telephone number of a person at a college or university using this software or a copy of a review of the software.

Send this information to Ms. Judith A. Turner, Assistant Editor, The Chronicle of Higher Education, 1333 New Hampshire Avenue, Washington, D.C. 20036 (202) 828-3500.

An article entitled "Assessing Academic Computer Software: 4 Basic Questions" appears on page 26 of the September 5 issue and describes some of the criteria by which software should be judged. (D.R.)

EMBELLISH YOUR CIA PROGRAMS WITH SOUND

by Victor I. Bendall*

```
5   REM  FANFARE
10  FOR I = 1 to 57
15  READ X
20  POKE (767 + I),X
30  NEXT I
40  CALL 776
50  END
60  :
100 DATA 160,176,169,192,32,168,252,96,162
101 DATA 7,189,41,3,141,0,3,173,48
102 DATA 192,189,49,3,32,168,252,206,0
103 DATA 3,208,242,224,2,240,3,32,2
104 DATA 3,202,208,226,96
106 DATA 0,128,254,64,208,48,48,48
107 DATA 0,16,16,19,16,19,20,21
```

Have you ever yearned for sounds from the Apple other than those it can easily generate? Are you tired of 'beep' from CHR $(7), 'click' from peek-16336 and 'buzz' from peeking-16336 from a program loop. When the program on the left is executed, a short machine-language routine will be poked into an otherwise unused part of RAM ($300) and then a six-note fanfare will sound. Once in place, any subsequent CALL 776 will produce the same tune. If you wish to experiment, the data in line 106 controls the duration of the sound and line 107 controls the pitch.

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FOOD FOR THOUGHT

The Catch-33 of computer uses in education ... We do not need computers and software because we cannot use them effectively but we cannot use them effectively because there is no commitment of resources to develop people who can use them effectively and it would be foolish to commit resources to train people to use computers when we do not have computers for them to use in the first place. ... We need to get started providing as much of the best education we can as soon as we can. Mistakes will be made. Inefficiencies will abound. Machines and software will become obsolete. But we cannot afford the luxury of going slow until we are sure of where we are going. The future waits for no one.
Jon A. Christopherson
SIGCUE Bulletin
Winter 1984, p. 1

COMMUNICATION IN THE SCIENTIFIC COMMUNITY

by Kenneth Ratzlaff*

Over the past decade, systems for computer-based communication have sprung up all over the country. Through them, computer users have been able to connect with systems which allow them to down-load information and to send and receive messages and programs.

These systems have taken three main forms. The first is the independent electronic bulletin board. Such bulletin boards are frequently operated by private individuals who have a computer with an auto-answer modem and appropriate software so that others with similar interests can dial in, read or leave messages, and down-load or leave computer programs. Frequently, a particular bulletin board has a clientele determined by geography, type of computer, or outside interest. For example, bulletin boards exist for local computer clubs, Apple or Osborne users' groups, sports car enthusiasts, and other diverse interest groups. Typically, there are no user fees, but long-distance phone charges apply and must be borne by the user.

A second type of communication system is the major information service. Compuserve and The Source are two of the biggest. A very large computer serves many users simultaneously and gives them access to data banks, programming and storage services, and bulletin boards. These services require a membership fee and a charge for connect time since network telephone services are used.

The third type of system is a network of major computers. For example, a UNIX users' network connects medium-size computers (which use UNIX); BITNET connects many major universities; ARPANET connects defense contractors; CSNET connects many computer science departments. In each case, the user may log on and operate either in a bulletin board mode or by directly addressing another user. Although the purpose of these networks is to facilitate collaboration, they are also used for such mundane matters as recommending restaurants or finding a program to solve some particular problem.

Each approach described above has advantages and disadvantages. To be successful, a computer network requires a commitment by all universities, colleges, and other employers, which use the network. The information services have sign-up fees (about $50), but group rates are possible) and monthly use charges (typically $20). The local bulletin board is attractive since small computers can be programmed to ring up at night and down-load desired information at lower long-distance costs; however the number of simultaneous users and storage space are limited.

The chemical community is now in need of a communication facility. Practical applications include transmission of manuscripts between collaborators, asking for help on a problem, sharing software tools, and holding on-line meetings. Both the Committee on Computers in Chemical Education and the COMP division of the ACS are interested in developing this type of communication. The ACS Committee on Science has suggested this approach.

At this point, views and ideas are needed to fuel as broad a discussion as possible. Please feel free to communicate your ideas to me.

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Ken Ratzlaff is editor of the Hardware QUERIES and WHO DONE IT? sections of this Newsletter and a frequent contributor of articles. He is currently Chairman-Elect of the ACS Division of Computers in Chemistry (the Editor).

WORKSHOPS, MEETINGS, CONFERENCES & COURSES

Please send information to Donald Rosenthal, Editor. Describe the program, include location, sponsoring group, dates costs and whom to contact for further details (name, address, and phone number). Information should be sent as far in advance as possible.

January 18 - 19: SERAPHIM - C.C.C.E. Teacher Workshop at John Burroughs School, St. Louis, MO.

This workshop has two basic objectives- To illustrate how microcomputers can be of use to a chemistry teacher and to provide an opportunity to preview representative samples of commercially available software. Contact Ms. Mary Harris, 755 South Price Road, St. Louis, MO 63124 (314-993-4040).

January 26: SERAPHIM - C.C.C.E. Teacher Workshop at Irmo High School, Columbia, SC.

See January 18 listing for details. Contact Ms. Kitty Farnell, Irmo High School, 6671 St. Andrews Road, Columbia, SC 29210 (803-781-2720) for additional information.

February 2: SERAPHIM - C.C.C.E. Teacher Workshop at Northern State College, Aberdeen, SD 57401.

See January 18 workshop listing for details. Contact Dr. Dwayne Rehfeld at the above address for additional information (605-622-2471).

February 9: SERAPHIM - C.C.C.E. Teacher Workshop at Beverly High School, Beverly, MA.

See January 18 workshop listing for details. Contact Mr. Paul Girard, Beverly High School, Sohier Road, Beverly, MA 01915 (617-922-2487) for additional information.

February 16: SERAPHIM - C.C.C.E. Teacher Workshop at California State University, Bakersfield, CA.

See January 18 workshop listing for details. Contact Dr. Fabian Fang, California State University, 9001 Stockdale Highway, Bakersfield, CA 93311 (805-833-3041) for additional information.

March 9: SERAPHIM - C.C.C.E. Teacher Workshop at Hofstra University, Hempstead, NY 11550.

See January 18 workshop listing for details. Contact Dr. Rod Finzel, Department of Chemistry at the above address for additional information.

March 13 - 15: "Tomorrow's Technology" - 1985 Microcomputers in Education Conference at Arizona State University.

Contact Donna Craighead, College of Education, Payne B47, Arizona State University, Tempe, AZ 85287.

March 14 - 16: Personal Computer and STD Computer Interfacing for Scientific Instrument Automation at V.P.I. and State University, Blacksburg, VA.

A hands-on workshop with each participant wiring and testing interfaces. Mr. David E. Larsen and Dr. Paul E. Field are directors. Workshop registration fee is $450. For more information contact Dr. Linda Leffel, C.E.C., V.P.I and State University, Blacksburg, VA 24061, (703) 961-4848.

March 16: SERAPHIM - C.C.C.E. Teacher Workshop at Hofstra

See the March 9 listing.

March 28 - 29: Western Educational Computing Workshops in Santa Cruz, CA.

Sponsored by the California Educational Computing Consortium. Contact Hal Roach, Computer Services, Mt. San Antonio College, 1100 North Grand Avenue, Walnut, CA 94542.

April 20: SERAPHIM - C.C.C.E. High School Teacher Workshop at Marion College, Marion, IN.

See January 18 listing for details. Joe Rich, Blackhawk Christian School, Fort Wayne, IN is the workshop leader. Contact Dr. Vickie Hess, 4201 South Washington Street, Marion, IN 7396 for additional information.

April 28 - May 3: ACS National Meeting at Miami Beach, FL.

Symposia and general papers. High school and student affiliate programs. CHED meeting chair is Richard Steiner, Department of Chemistry, University of Utah, Salt Lake City, UT 84112; (801-581-6681). A symposium on Bachelor Degree Programs in Computational Chemistry is being organized in the Division of Computers in Chemistry by Dr. Peter Lykos.

May 30 - June 1: Personal Computer and STD Computer Interfacing for Scientific Instrument Automation at V.P.I. and State University, Blacksburg, VA.

Similar to workshop being held March 14 - 16. Refer to this entry for further details.

June 1: SERAPHIM - C.C.C.E. Teacher Workshop at Columbia Greene Community College, Hudson, NY 12534.

See January 18 listing for details. Contact Dr. Jeanne Gizare at the above addresss for additional information.

June: 1985 Project SERAPHIM Workshop Leader Training Program at the University of Texas.

A week-long workshop. Workshop leaders will be trained in the use of existing materials for presenting workshops around the country. Participants will develop workshop materials for computer interfacing, use of spreadsheets and word processing by chemistry teachers. Participants in this NSF funded project will receive travel support, a subsistence allowance and a $100 honorarium. Write Dr. J. J. Lagowski, Department of Chemistry, University of Texas, Austin, TX 78712 for application forms and additional details.

June 10 - 14: VIIth International Conference on Computers in Chemical Research and Education at Garmisch-Partenkirchen in the Bavarian Alps, Federal Republic of Germany.

Plenary lectures, poster presentations and a computer exhibit. For further information write Conference Office, Gesellschaft Deutscher Chemiker, Abt. Tagungen, P.O. Box 900440, D-6000 Frankfurt am Main 90, Federal Republic of Germany.

July 28 - August 1: Seventh C.C.C.E. National Computer Workshops - East at Clarkson University, Potsdam, NY 13676.

Six intensive workshops are planned. See detailed information elsewhere in this Newsletter. Contact: Donald Rosenthal at the above address (315-268-6647).

July 29 - August 2: World Conference on Computers in Education in Norfolk, VA.

Contact Gerald Engel, WCCE/85, Department of Computer Science, Christopher Newport College, Newport News, VA 23606.

August 2 - 5: CHEM ED '85 at Montclair State College, Upper Montclair, NJ.

Workshops, demonstrations, presentations, poster sessions and computer sessions. Individual presentations demonstrating effective use of currently available software and hardware which can be used in the classroom. Approaches to problem solving as illustrated by TK! Solver (Alan Smith) and George (Dick Cornelius). Computer Assisted Testing (Darell Beach). Workshops on laboratory instrument interfacing; and spread sheets, word processors and other aids to the chemistry teacher. A C.C.C.E./SERAPHIM software evaluation center will operate throughout the conference. Contact CHEMED '85, C/O Dorothy Lehmkuhl,56 Normal Avenue, Upper Montclair, NJ 07043 for further details.

August 5 - 16: "Honors Workshops for Precollege Teachers of Science and Mathematics" at Clarkson University, Potsdam, NY.
This NSF supported program will consist of general interest lectures in science and mathematics and intensive workshops in specific areas. The program is primarily intended for chemistry, biology, mathematics and physics teachers. Workshops on Computers in Education, Computer Simulation, Chemistry, Biology and Physics will be held. Participants who are selected will receive room and board and a $300 stipend for their two week stay. Contact Dr. Randall Caton, Chairman, Summer Science Program for High School Teachers, Physics Department, Clarkson University, Potsdam, NY 13676 (315-268-2350 or 2396) for application forms and further details.

August 23 - 28: IUPAC-sponsored 8th International Conference on Chemical Education in Tokyo.
Write J. T. Shimozawa, Chemical Society of Japan, 1-5 Kanda-Surugadia, Chiyoda-ku, Tokyo, 101 Japan.

September 8 - 13: 190th ACS National Meeting in Chicago, IL.
Symposia, general papers and exhibits. Those wishing to present papers must submit four copies of an abstract with the original on an ACS abstract form by May 1 to William F. Coleman, Department of Chemistry, Wellesley College, Wellesley, MA 02181 (617-235-0320, ext. 3129).

October 18 - 19: First Eastern Small College Computing Conference at the University of Scranton and the Hilton at Lackawana Station.
Designed to promote a free exchange of information among small college personnel concerned with the use of computers in the academic environment. Intended to span all academic disciplines. Topics include software, simulation, course management, curriculum development, computer literacy, the computing laboratory and micro/mini/mainframe. Extended abstracts are due on February 15th, notification of acceptance May 17th, completed papers are due by July 15th. Contact Professors Meinke and Beidler, ESCCC, University of Scranton, Scranton, PA 18510.

SCIENTIFIC APPLICATIONS OF THE APPLE GAME PORT
PART III
by Kenneth Ratzlaff*

In previous notes, we looked at methods of gathering data using the Apple and Commodore 64 game ports. The analog-to-digital converter in each case measures resistance and we noted some useful resistive transducers, particularly the thermistor, the photoconductive cell, and the potentiometer.

A Project SERAPHIM disk entitled "Data Collection/Retrieval System" developed by John K. Estell and John W. Moore is available. This disk desribes how the Apple II Game I/O port can be used to collect data, store it on floppy disk and retrieve it for analysis. Software for data collection, retrieval, and graphical and numerical display is contained on the disk. A tutorial on the disk gives an overview of the system and contains instructions for using the game port, building an interface cable and using the software routines. The necessary hardware can be purchased for under $20 in local electronics stores. The disk can be purchased for $4 from Project SERAPHIM (Department of Chemistry, Eastern Michigan University, Ypsilanti, MI 48197; (313) 487-0368) and will be available early in 1985.

Robert F. Tinker and Diana Malone have developed an experiment package entitled "Experiments in Chemistry". The kit consists of hardware and software which can be used with an Apple II, II+ or IIe having 48k or more of core. Fifteen experiments have been developed using the package which involve temperature measurements (enthalpic titrations, cooling curves and measuring the specific heat of metals), pH measurements or titrations, EMF measurements or potenciometric titrations. Additional experiments can be devised by the user. The software is menu driven and interactive. Graphs and tables can be generated. First and second derivatives of titration curves can be obtained. The complete package can be purchased from HRM software for $335 (175 Tompkins Avenue, Pleasantville, NY 10570; (800) 431-2050). A demonstration disk is available to those contemplating purchase.

In this final note, we want to look at some experiments which use the game port to teach some fundamentals of data acquisition. In this regard, there are two general principles to be demonstrated: the effects of aliasing and of resolution.

ALIASING. The problem of aliasing the signal is best understood when one attempts either to sample a sinusoidal signal or to sample a dc signal when sinusoidal noise is present. The sampling theorem states that a signal must be sampled at the rate of at least twice the highest frequency present. Failure to heed this rule will lead to the appearance of a component of the signal with a frequency which is an integral fraction of the actual frequency.

We can demonstrate this phenomenon with the game port by using a potentiometer as the pivot of a pendulum as outlined in the last installment. If the pendulum is allowed to swing, the resistance will vary sinusoidally with time. Set up the pendulum so that the period is short, about 1 second. If you sample several times per second and plot the results, a sine wave will result with the same period that you observe visually.

To demonstrate an aliased signal, repeat the experiment a large number of times, each time increasing (with a FOR-NEXT wait loop) the time between acquisitions. When the acquisition rate is equal to the period of the pendulum, the readings will be constant, and as the acquisition rate is slowed even further, a sine wave will reappear, but at a lower frequency.

In this experiment, the objective is to measure the frequency and amplitude of the sine wave, but the aliased signal has the wrong frequency even while having the appearance of being correct. A similar experiment with a voltage-input ADC might entail acquisition of a spectrum from a spectrophotometer when a 60 Hz noise signal is super-imposed on the signal. If an analog filter is not used to remove the 60 Hz noise, it could very easily appear as a much lower frequency sine wave superimposed on the spectrum. The effect of the acquisition of gaussian-shaped peaks is similar but is less intuitive and will not be discussed here.

RESOLUTION. The resolution must be controlled in a manner similar to the scale on a strip-chart recorder. The signal span should be from nearly zero to nearly full-scale. If not, precision is lost.

The measurement of heat transfer is a simple experiment which simulates a first-order process. Take a beaker of cool water stirred by magnetic stirrer with a thermistor to measure the temperature. Make a "hot finger" by blowing steam into a test tube which is partially submersed in the beaker. The temperature of the water will rise to a steady-state temperature.

The resolution can be reduced by at least two methods. One method would be to begin with quite warm water so that the span is only a few degrees when the thermistor is set for about 100 degrees full scale. The second method would be to use a different thermistor so that full scale would be much greater than the temperature range of the experiment. If the signal range is small, it becomes easy to show that precision is lost.

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AN INEXPENSIVE WORD PROCESSING SYSTEM
by James D. Beck*

If you would like to do word processing at home with letter-quality copy, but don't want to spend a lot of money, consider this system: a Radio Shack Color Computer, the Telewriter-64 word processing program, and the Brother Correctronic 50 electronic typewriter. The entire system can be obtained for about $800. I have been using this combination for about six months and am very pleased with the results.

The Brother typewriter produces beautiful copy using interchangeable daisywheels which are available in several type styles. Although quite slow as a printer (12 cps), it has the advantage of doing double duty as an excellent electronic typewriter with features such as full line correction, variable pitch, and a repeat key. It can be purchased at discount stores for about $300. Add $150 for the computer interface. Brother will tell you how to make a cable to connect the interface to the Color Computer (parts are available at Radio Shack for a few dollars).

Telewriter-64, although inexpensive, is a good word processor for home use. Cost is $50 on cassette or $60 on disk from Cognitec, 704 N. Nob Avenue, Del Mar, CA 92104. Features include upper and lower case in several display modes, simple but effective editing capability, right justification, and the capability of using embedded format and control codes. It is menu-driven and simple to learn. The tape version operates surprisingly fast and has been very reliable. Used with the 64K Color Computer, you have about 40K left for text storage.

This system gives you a good small home computer with a good BASIC interpreter and color, sound, and graphics capability. It operates with any color or black-and-white TV (I use a $50, 12-inch black-and-white for word processing). There is a fairly extensive collection of games, educational programs, and general purpose software available for the Color Computer. With this system you also have an electronic typewriter which can be used independently of the computer, without even disconnecting the interface. I especially like being able to correct mistakes in the final copy, using the typewriter mode. This is usually faster than going back to the word processor file, making the correction, then printing the document again.

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SERAPHIM/CCCE WORKSHOPS

The series of one day intensive workshops for high school chemistry teachers is off to a flying start with at least sixteen already scheduled and many more pending confirmation of dates. In order to improve flexibility there are now two sets of commercial software available and arrangements are being made for a third. Because of the increased number of workshops, responsibility for scheduling and distributing materials will now be split between the eastern and western halves of the country, using the Mississippi River as the dividing line. The regional coordinators are:

ACS-CCCE Teacher Workshop Coordinator EAST:

James H. Nelson
Harriton High School
Rosemont, PA 19010
(215) 525-1270

ACS-CCCE Teacher Workshop Conference WEST:

Ken Hartman
Ames High School
Ames, IA 50010
(515) 232-8440, ext. 228

Both Jim and Ken have had extensive experience in organizing and presenting workshops. Most recently, Jim was responsible for the sessions on teaching with computers given to the 1984 Presidential Award Teachers at the NSTA sponsored workshops last summer. Ken was very influential in the design of the workshop kits assembled last summer during the SERAPHIM Workshop Leader Training Program. For details concerning upcoming workshops see the Workshops, Meetings, Conferences and Courses section of this Newsletter. If you have questions about future workshops, contact Jim if you live in the East, and Ken if you live in the West.

BOOK REVIEWS

Anyone willing to review books for the Newsletter or wishing to suggest books for review should write to Dr. Harry E. Pence, Department of Chemistry, SUNY at Oneonta, Oneonta, NY 13820.

AN OVERVIEW OF UCSC p-SYSTEM
Reviewed by Brian Pankuch*

The following two books cover the UCSD p-system. The p-system is a sophisticated but relatively easy to use operating system. It is the tool that enables you to use your computer in such areas as running application programs, writing your own programs, keeping track of your files, or using your computer as a word processor. You can use Pascal, FORTRAN, BASIC or assembly languages singly or in combination in a program under the p-system. I have only used Pascal and assembly languages together, but all other combinations are well documented. Independent studies of operating systems rank the p-system to be as good or better than competing operating systems. The p-system appears to be the best for transporting programs between different machines. My own experience has been transferring Pascal programs among Apples, Teraks, and Sages. Although I have not found it easy to electronically transfer programs due to the many ways in which the RS-232 port is used, once transferred, programs have worked. However, programs containing graphics can have problems.

The p-system is particularly well suited for transferring programs since it is available on virtually all micro and minicomputers. It is comforting to know that you can purchase a new computer and have your old programs work on the new system, and you can share programs with colleagues without major revision.

I've found the time invested in learning this operating system well spent. Many time-saving techniques are available; to that end, you may find one or both of the following useful.

INTRODUCTION TO THE UCSD P-SYSTEM
by Charles W. Grant & Jon Butah
SYBEX, 1982, 300 pgs., $15.95

The two authors are a computer scientist and a writer with teaching experience, respectively. Their collaboration results in a book which is comprehensive and readable. The major parts of the p-system, the editor and the filer, are each given a full chapter. Each available command is covered, with auxiliary information as needed to explain practical examples. This is unlike the usual manual, which covers one subject assuming you know all other topics bearing on the subject, and results in hours of hunting through inadequate indexes.

When using the editor, with a few keystrokes you can change to a word processing mode. This is quite useful for all types of memos and reports. It is handy since you use exactly the same editor commands for word processing as for writing your own programs. Unless you are a very heavy user or have total recall, decreasing the number of sets of editing commands you need to remember is a blessing. With one diskette and one set of commands, you can do all you need to, and you don't need to purchase a separate word processor.

A professional word processor has many additional features, but I've found the above quite adequate for memos and reports. Illustrations showing you exactly what should be on the screen are used extensively and make the numerous examples clear.

Additional information is given on writing small and large programs. Many useful hints are given on optimizing the running and storing of programs. Although the examples given in this section are in Pascal, they are usually under 6 lines in length and written to be understandable even if you don't know Pascal. In general, good techniques for logical program development also optimize run-time and storage requirements. An example from Pascal would be using local variables instead of global variables whenever possible.

If you are new to the p-system this book will be a great help. A number of the examples will open a few new vistas to experienced users. Overall, this is a readable book which does exactly what it proposes - gives the reader an introduction to the UCSD p-system.

PERSONAL COMPUTING WITH THE UCSD p-SYSTEM
by Mark Overgaard & Stan Stringfellow
Prentice-Hall, Inc., 1983, 448 pgs., $16.95

The book is divided into three parts. The first is an introduction to the most useful and most used aspects of the p-system. General information on computer diskettes and hard disks is discussed, and sufficient background is provided to allow you to grasp the interconnections between the various pieces of hardware and software.

The tutorial style takes you logically through the steps you need whether using a purchased application program, writing your own program, or using the system as a word processor. This part of the book is not comprehensive. It gives you a very practical method to get the above type of tasks done and references sections in the second part of the book for in-depth coverage.

In the second part of the book, the operating system, editor and filer each has a chapter. In addition to a comprehensive overview, each command available from that level is listed alphabetically and covered completely. The major advantages of these descriptions over those in the manuals that come with your computer are a more readable style and many more examples. The examples are straightforward and generally independent of a particular language. Where the examples are language dependent, separate sections for Pascal and FORTRAN are presented.

The third part covers modules, p-system programming tools, debugger tools, and generally gives you a better feel for program development. This part is only about 30 pages in length and is not done with the detail and helpfulness of the first two parts. It reads much more like the usual manual. This is unfortunate since the topics are quite important.

Both authors are associated with SofTech, the group which markets the p-system. They have a number of ways of doing things which save a lot of effort. For example, my present computer, a Sage II, has 640K Bytes available on diskettes. It is surprising how many different files you can store in this amount of space, but removing old files can be a chore since you can't see all the file names at once. It is really tiresome typing out each complete file name. The authors suggest using wildcards. Going to the Filer and using the Remove command with the ('?') wildcard will step through each file on the diskette and ask if it should be removed. Responding with a "y" or a "n" will respectively leave or remove the file. This is easier and faster. Other tidbits discussed include the ability to transfer output or files from the console to your printer or to a diskette from the middle of a program. This and many other helpful procedures are outlined.

To sum up, the first book is simpler and a good introduction; the second is more advanced and perhaps a bit more difficult, but covers more. Both are better written and much easier to use than any other manuals I've seen.

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THE UCSD PASCAL HANDBOOK— A REFERENCE AND GUIDEBOOK FOR PROGRAMMERS

by Randy Clark & Stephen Koehler
Prentice-Hall, Inc., 1982, 356 pgs., $15.95
Reviewed by Brian Pankuch*

This book is about programming in UCSD Pascal. It is divided into two parts. The first 172 pages cover UCSD Pascal in detail. Included are all the usual topics plus modularity, concurrency, semaphores, memory management and much more.

The second part is a guide which includes 30 well written programs demonstrating good style. Each program is discussed in detail along with the output produced. The discussion goes beyond just the listed program to the reasons why a certain method is chosen plus auxiliary information which is helpful for more complete understanding. For the longer, more difficult programs each procedure is discussed individually, then together.

I copied into my system one of the longer programs (over four pages) that uses many of the practices of application and systems programming. After typing in the program, I was pleased to find that it seemd to work as described. After more exhaustive testing, the program, which was supposed to keep track of records in a file by listing allocated and unallocated records in the file, began mixing the two lists. This only happened for certain orders of operations. Smaller programs seemd to work fine, but you will want to be careful about using segments or programs without thorough testing.

This book forms a bridge between most of the books on the market, which introduce Pascal with very simple examples and cover part of the language, and other manuals that cover everything but have few, if any, examples. It is more of a reference book than a book to read page by page. It is a good second step after you've had an introduction to Pascal.

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CAMPUS COMPUTING STRATEGIES

Edited by John W. McCredie
Digital Press, 1983, 316 pgs., (hardcover) $25.00
Reviewed by Harry E. Pence*

One of the many serious problems facing higher education in the current decade is the task of effectively integrating computing and the new information technologies into the academic community. Most campuses are presently in the process of attempting to meet the technological and organizational difficulties that accompany this challenge. Campus Computing Strategies is written to assist these efforts by describing the situation at several colleges and universities which are considered to be in the vanguard of these developments, so that other schools can use them as models.

This book is the result of a study performed during the 1981-82 academic year by EDUCOM, a non-profit consortium of over 500 colleges and universities founded in 1964 to promote the use of information technology in higher education. It focuses on the underlying strategies that were shaping decisions at ten institutions considered to demonstrate an innovative approach to this problem. Each school is described in a separate chapter, written by an individual from that campus who was directly involved in the planning process; John McCredie, the President of EDUCOM, provides an introduction to the topic. The emphasis throughout is not on hardware or software, but rather on identifying crucial problems and the organizational structures necessary to solve these problems.

The institutions described in the book are Hamilton, Dartmouth, Pepperdine, Carnegie-Mellon, Rensselaer Polytechnic Institute, Stanford, Cornell, University of Iowa, University of Minnesota, and the California State University system. The schools chosen represent a broad range in terms of both size and educational mission. Although a few important categories of institutions, such

as two-year colleges, are not represented, most readers at institutions of higher education will find a model for comparison. The individual authors take somewhat different approaches, but each chapter does offer a useful answer to the question of what colleges are doing, or planning to do, about these technological developments.

It is surprising to discover that, despite the widely differing types of schools represented, there are many similarities in their plans. McCredie notes a number of common strategies including a more decentralized information-processing environment, increased use of personal computers, development of local and national networks, library automation, the development of a local definition of computer literacy, and the expansion of text processing systems for both faculty and students.

In terms of the potential effects upon the educational process, probably the most important factor in common is the effort to integrate computing into the broader picture of communications technology. The various chapters discuss developments in expanded text processing, electronic mail, and networking which suggest that the dream of an electronic campus is rapidly becoming a reality.

As might be expected, there is less unanimity on the best organizational structure to accomplish these goals. Most of these institutions have designated a single office or individual to coordinate these issues related to information processing, but beyond that there is considerable diversity. For instance, the degree of faculty participation in the decision-making process varies, even though all of the campuses rely heavily on faculty opinions in order to define future needs. Some campuses have created a complex committee structure to deal expressly with the new technology, while others are depending primarily on the efforts of the individual departments.

Judging from the articles, it would appear that a very decentralized model for planning has made it difficult to develop a broad, campus-wide approach. In cases where the process is overly centralized, however, the reports indicate a lack of flexibility and a failure to identify problem areas early enough. The most successful institutions seem to have a general plan to provide overall direction, but also permit departments and other groups to have considerable flexibility within that plan.

This is not a book that will be equally useful to everyone who works with computers. It will be most valuable for those individuals who are directly involved in the development of computing plans for their campuses or departments. However, even for those who are more interested in using computers than in administrative planning, it may be interesting to compare the local campus with those considered to be the leaders in this rapidly developing field.

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SEVENTH C.C.C.E. NATIONAL COMPUTER WORKSHOPS-EAST

The registration form for the National Workshops to be held in Potsdam, NY, July 28th to August 1st, 1985 appears on the following page. Only the registration fee needs to accompany the Registration Form. Checks or money orders should be made out to Clarkson University. Housing will be provided in dormitory rooms with a shared bath between two rooms. The cost for single occupancy for four nights is $52. Double occupancy is $35 per person. This revised rate is less than is indicated in the registration form. Those interested in making Potsdam the home base for a vacation may be interested in weekly room rates which are $57 for single occupancy and $43 per person for double occupancy. In addition to local recreation Potsdam is within easy driving distance of the Adirondacks and Lake Placid, the Thousand Islands, Ottawa and Montreal. Persons planning to stay five or more days should request weekly rates.

SEVENTH C.C.C.E. NATIONAL COMPUTER WORKSHOPS EAST

July 28-August 1, 1985 • Potsdam, New York 13676

Sponsored by

The American Chemical Society • Division of Chemical Education • Committee on Computers in Chemical Education and Project SERAPHIM

Seventh C.C.C.E. National Computer Workshops—West

Western workshops are being planned for the Los Angeles area during the summer of 1985. Those wishing more information should contact W. Van Willis, Department of Chemistry, California State University, Fullerton, CA 92634; telephone (714) 773-3621.

Workshops

Chairman of Organizing Committee: **Donald Rosenthal,** Clarkson University, Potsdam, NY 13676, (315) 265-9242 or 268-2389

A. GETTING STARTED

Director: Paul Cauchon
Canterbury School
New Milford, CT 06776
(203) 355-3103

This workshop is designed to provide the background and hands-on experience needed to start using a microcomputer as a classroom tool.

Participants will learn:

- how a computer can improve teacher efficiency
- how to handle various hardware components
- a working vocabulary of computer jargon
- new teaching strategies in chemistry made possible by computers
- enough about BASIC to interpret and modify programs
- how to design an effective instructional program
- what to look for (and look out for) in software
- limitations and problems and what to do about them

No previous experience is assumed.

B. DESIGN AND DEVELOPMENT OF COMPUTER-ASSISTED INSTRUCTION PROGRAMS

Director: Alfred J. Lata
Department of Chemistry
University of Kansas
Lawrence, KS 66045
(913) 864-4054

The development of an effective CAI program (teaching drill and practice or simulation) requires: careful selection and imposition of limits on the topic to be covered; choice of pedagogical approach to be used; appropriate and proper design of the program; selection and development of software tools (routines); and the design of the computer-student dialog before coding begins. After the program has been generated, it must be tested and debugged, and student-tested in anticipation of further modification.

Participants in this workshop will be involved in all phases of the design, development and generation of a CAI program, working in small groups on a topic of their choice.

Participation in this workshop will increase the breadth and effectiveness of the CAI author, as well as help develop recognition and appreciation of a well-written and effective CAI program.

A knowledge of BASIC is desirable.

C. INTRODUCTION TO PASCAL

Director: K.W. Loach
Department of Chemistry and
Department of Computer Science
SUNY College of Arts and Science
Plattsburgh, NY 12901
(518) 564-2230

In this workshop, Pascal will be used to teach the basics of well-structured program design. Good program style and anti-bugging methods will be demonstrated for a series of sample programs. Workshop participants will spend as much time as possible in testing, writing and executing programs in a laboratory setting. Emphasis will be placed on the subdivision of tasks into largely independent routines and functions, and on the avoidance of dangerous programming practices. Demonstrations will be given of the principal data types and control structures, the definition of new data types, and simple file manipulations.

Participants must have experience with at least one computer language.

D. MICROCOMPUTER INTERFACING

Director: Chris Titus
The Blacksburg Group
P.O. Box 1008
Blacksburg, VA 24060
(703) 951-9030

In this workshop participants will learn how the APPLE II computer can be used to acquire data and to control experiments. During the course approximately 50% of the time will be spent in the laboratory where participants will have an opportunity to work through a number of experiments, including interfacing to the APPLE II bus and using the game ports and simple transducers to demonstrate the principles of data acquisition and control. In the lecture portion of the course simple gates, I/O software, analog to digital and digital to analog converters will be discussed, along with serial communication, solid state relays and other state-of-the-art topics.

Prerequisites: None

Beginners—experience with BASIC and digital electronics would be helpful.

E. APPLICATIONS SOFTWARE

Directors:

Patricia C. Flath
Paul Smith's College
Paul Smiths, NY 12970
(518) 327-6264

Donald Rosenthal
Clarkson University
Potsdam, NY 13676
(315) 265-9242

This workshop will cover word processing, electronic spreadsheets, data-base management systems, and numerical and statistical methods programs. It will discuss and illustrate the use of representative examples of such applications software. More than half the time will be devoted to hands-on use on a Z-100 microcomputer. Other microcomputers will be available. Classroom, teacher and administrative applications will be discussed.

Prerequisites: None

F. MICROCOMPUTER GRAPHICS

Director: Victor I. Bendall
Eastern Kentucky University
Richmond, KY 40475
(606) 622-1459

This workshop is for those who wish to utilize computer graphics for simulation, for clarification of chemical concepts or for the display of data. The production and animation of two and three dimensional images and their integration into interactive CAI programs will be covered. A hands-on approach will be taken, although some background on how the computer produces and stores images will be given. Software will be distributed and demonstrated which will allow the free mixing of text and graphics and the display of chemical formulae complete with lower case letters and true subscripts.

An elementary knowledge of BASIC will be assumed.

Facilities

These workshops will use APPLE II, Zenith Z100 and IBM 4341 equipment at Clarkson University, State University College of Arts and Science at Potsdam and Potsdam High School. Also, IBM PC, PET, TRS 80, VIC 20, ATARI 800, and DEC PC350 microcomputers will be available.

Tentative Schedule

Sunday—Relax while you can!

9 am-6 pm	Adirondack Mountain Club outing—hiking, boating or climbing (optional—participants should arrive Saturday evening)
noon-6 pm	Software and book exhibit (optional)
6:30 pm	Social Hour
7:30 pm	Banquet Speaker: Dr. David Bray Dean of the Educational Computing System, Clarkson University

Monday-Wednesday—Work, work, work!

8 am	General Meeting (each meeting will have one speaker, explaining the state-of-the-art in one of the workshop areas).
9 am	Workshop Sessions
noon	Lunch
1 pm	General Meeting (see above)
2 pm	Workshop Sessions
5:30 pm	Dinner
7-9 pm	Workshops—Monday, Wednesday. Poster session and software exchange—Tuesday

Thursday

8 am	Workshop Sessions
11 am	General Meeting
Noon	Lunch

Workshop Sessions will be three hours in length.

Living Accommodations

Registrants may live in residence halls at Clarkson University. The room cost for four nights (Sunday through Wednesday) is $56 for a single room and $36 per person for a shared double room. Arrangements can be made to arrive early or to stay beyond noon on Thursday for an additional fee. Families can be accommodated. A list of local motels is available upon request.

Meals

The cost for meals (including the banquet) from Sunday evening through lunch on Thursday is $55 per person. Additional meals may be purchased at the dining halls.

Workshop Registration

Enrollment in each workshop will be limited. The registration fee must accompany the Registration Form in order to reserve a place. You will be enrolled in only one of the workshops. Be sure to indicate which workshop you wish to register for on the Registration Form. Select a second choice, if you have one. Registrants will be notified if a workshop is full. The registration fee is fully refundable upon request prior to JUNE 15.

Location

Potsdam is located in northeastern New York about 20 miles from the Canadian border and north of the Adirondack mountains. Potsdam is readily accessible by highway. The nearest major U.S. airport is Syracuse. There is a bus which runs from the Syracuse airport directly to Potsdam. A commuter airline flies to Massena. Maps and transportation information will be sent upon registration.

REGISTRATION FORM

Name _____

Address _____

_____ Phone _____

☐ Male ☐ Female

WORKSHOPS

1st Choice _____

2nd Choice _____

☐ Check here if you wish to present a computer related poster session, exhibit software or provide public domain software to share (Tuesday evening).

REGISTRATION FEE $_____
($100 prior to June 15)
($110 prior to July 15)
($120 after July 15)

ADDITIONAL EXPENSES
Please check your preference:
☐ 12 Conference Meals including the banquet $55
☐ Banquet only $13
☐ Room (4 nights) (single) $56
(double) $36

Roommate _____

Send this form and a check or money order in U.S. funds for the REGISTRATION FEE ONLY to:
Doris Frazer, Director, Conference and Information Center, Clarkson University, Potsdam, NY 13676, (315) 268-6647

COMPUTERS IN CHEMICAL EDUCATION NEWSLETTER

SUBSCRIPTION RENEWAL FORM

The mailing list will be updated beginning with the September 1985 Newsletter. If you wish to renew or initiate your subscription please fill out this form completely and return it with your remittance to:

Dr. Donald Rosenthal
Department of Chemistry
Clarkson University
Potsdam, NY 13676

Please check one:
U.S.A. __ 1 year for $2.50 __ 2 years for $4.50
All other countries __ 1 yr for $5.00 __ 2 yrs for $9.00
Payment MUST accompany this form. Please make a check or money order payable in U. S. funds to Computers in Chemical Education Newsletter.

Back issues from 1981 to the present may be obtained at $1.50 per issue. Issues appear in (1) March, (2)June, (3)September and (4)December.
Number of back issues ordered ___ $1.50/ issue $_____
Specify which issues _____

NAME _____

ADDRESS _____

_____

_____

CITY _____ STATE____ ZIP_____

PHONE NUMBERS Work (___)_____ Home (___)_____

Courses which you teach _____

Name of school or professional affiliation, if not indicated in the above address.

Please provide all information requested on the other side of this sheet.

OVER PLEASE

1. Are you a member of the ACS? __ Yes __ No
   Division of Chemical Education __ Yes __ No
   Division of Computers in Chemistry __ Yes __ No

2. Brief description of hardware and software which you use.

3. Do you have telecommunications capabilities? __ Yes __ No
4. What communicates with what? Indicate any special software or

5. Do you have access to any networks? __ Yes __ No
   If so, please identify. _____

6. Areas of Computer Activity and Interest

Leave the space provided below blank if you have no present interest or activity. 1 means a little, 2 means moderate, 3 considerable, and 4 with a consuming passion.

Use the space on the right to identify the courses in which the software or hardware is used. Identify the programming language(s), computer and any specialized hardware or instruments used.

	Degree of Interest	Activity	Description of Use
CAI Drill and Practice			
CATC (Comp. Assisted Test Construction)			
CMI (Comp. Managed Instruction)			
Simulation			
Numerical Methods and Statistics			
Graphics			
Software development other than above			
Interfacing			
Laboratory Automation			
Other (specify)			

	Personal Use	Administrative Use	Use in Instruction
Word Processing			
Software Used			
Electronic Spreadsheets			
Software Used			
Data Bases			
Software Used			