**With 'Dollars and Sense' Examples**

**GAO Study Pinpoints Working CPE Tools**

By Don Leavitt

WASHINGTON, D.C. — Users should be provided with comprehensive manufacturer-prepared guides containing information to aid them in obtaining increased efficiency from their systems.

That was one of the recommendations of a report on computer performance evaluation (CPE) tools and techniques prepared for Congress by the General Accounting Office (GAO) and now available to the general public for $1.50 per copy.

Spiced throughout with "dollars and sense," examples of systems software contained by particular agencies, the 44-page document was prepared last winter and clearly triggered the formation of a CPE office within the General Services Administration (GSA) [CW, June 5, June 12].

GAO reviewed 47 computer installations in industry and government in preparation for this report, which is set up as a "how to" primer of the tools and techniques. Working through a computer site point-by-point, it includes recommendations for increasing efficiency of application programs. 

"... of operating system software," etc.

**Shows Why**

Though it does not go into great detail of how the tools or techniques are used, the report shows why they should be used. Through a simple questionnaire, one federal agency eliminated 208 unnecessary reports, which represented 13% of the reports its users reviewed. Goddard Space Flight Center was cited for using a software monitor and saving an estimated $1.7 million in computer time annually, by improving a few key programs.

The Defense Intelligence Agency, working from hardware monitors, charged an application that needed to "turn output" three times. That represented an increase in efficiency of application programs. 

**Voters were counted by the number of people who went to the polls.**

Whether the trouble belonged primarily to the NCR Century 100 used by the county, the IBM computer ballot cards punched by voters or the Computer Election Systems (CES) program employed to compile ballot results remains unclear, according to a Jefferson County spokesman.

"What is certain, though, is the need to devise a system that doesn't waste the taxpayers' $53,000 spent each year to leave our present computers," he said.

**Run Out of Room**

The tabulation process took an extra day in Clarkamas County, Ore. Halfway through the election on a school district operating levy, officials discovered they had run out of room on the disk serving their Burroughs 3500.

"We noted the totals, cleared the disk and ran the other half of the election votes on the computer," said county election supervisor Norman Bass. After the election was over, a disk backup was ready.

**On the Inside**

Burroughs Fills In L Series

By Edie Holmes

Of the CW Staff

With November elections just five months away, local officials throughout the county are anxiously to iron out some problems encountered in computerized vote counts of recent primary elections.

While computers were used in many areas to decrease the time between casting ballots and publishing election results, in some instances system errors caused delays, lost of money and frustration among officials who resorted to counting ballots by hand.

A three-and-a-half hour delay accompanied the Democratic Party primary returns in Jefferson County, Texas, last month, for example. A recount became necessary when it was discovered more votes were counted than the number of people who went to the polls.

**The Centralization Alternative**

"Too Much Power" Too Hard to Handle

By Patrick Ward

Of the CW Staff

PITTSBURGH, Pa. — Jones & Laughlin Steel Corp. (J&L) decided in 1969 that it had just too much computer power.

"The move "will significantly extend an already profitable centralization effort" and bring a centralized data base capability to the firm, commented James Paulos, vice-president finance and treasurer.

When the company began looking for new CPUs, J&L prepared a proposal with about 150 pages of specifications and questions and another 150 pages on the company's DP workload, Mages recalled.

IBM, Honeywell and Univac all recommended centralization, while Burroughs recommended a regional centralization approach.

J&L benchmarked the competing CPUs with samples of its workload.
Delays Put Damper on Some Votes Counted

(Continued from Page 1)

established, and election results were processed again with vote totals matching those of the first two runs, he added.

Despite hardware and programming problems, officials in Riverside County, Calif., managed to finish their tally of primary election votes within an hour of closing the polls.

"We corrected a really old memory failure on the CPU of our IBM 370/155 just before the computer caught fire," said an election department official commented. "That messed up the terminal display. The print program was dropping the last three digits from the vote totals."

The drop from 4,000 votes to four came as quite a shock to one candidate, but he was reassured of his position when a revised program took over 15 minutes later, the department spokesman said.

Double Trouble

Even when computers are used only to give the public an early idea of who's winning an election and have nothing to do with the official tally, election officers in Trenton, N.J., found problems can still occur. In tabulating votes, the city's IBM System/3 added one candidate's results from five districts and then doubled the figure.

"Candidate Hutchinson's final vote count would have been astronomical," said the man marked Stanley Mariani, city clerk. He attributed the difficulty to "some human error made during the programming process."

Several counties have run into difficulties trying to get their computer systems to handle election functions. In Maricopa County, Ariz., for example, a package of election programs was supposed to improve voter registration in time for the fall elections but will probably not be in use in Maricopa County this November, county election officers attributed the trouble to "some human errors, but the whole, we've encountered no problems in over 600 elections."

Among those instances where "human error" was involved was the Jefferson County, Texas, election. As program supplier for the county, CES contends the foul-up was due to hardware problems, that the programming error -- a real problem which eventually caused the recount -- would never have happened if the computer had functioned properly.

Jefferson County officials seem to agree -- since the election, they have purged punch cards and ordered minor corrections from CES and used them in their June 1 election, according to John E. Emmerson, who was the UNSA SASAKI, Asian bureau. KATHRYN V. DINNEEN, market research. LEETE DOTV, production manager. HENRY FLING, production supervisor. W. WALTER BOYD, publication manager. PATRICK J. MCGOVERN, publisher. EDITORIAL OFFICES: 797 Washington St., Newton, Mass. 02166. Phone: (617) 965-5000. Times: 8:15 a.m., 12:15 p.m., 4:15 p.m., 6:30 p.m., 8:30 p.m., 10:30 p.m. Sunday Times: 9:30 a.m., 6:30 p.m., 8:30 p.m. Circulation: 9,600,000 of which 10,000,000 is distributed weekly (except: a single combined issue for the last week of December and the first week in January).

MARGARET PHELAN, circulation manager. Through University Microfilm, Periodical Entry Computerworld can be purchased on 35mm microfilm in half-volumes (six-month periods) through Infocorp, Inc. because it didn't like the way the Democratic machine was trying to change the computerized voting.

With difficulties either settled or ignored, the county purchased the $31,000 equipment in time for a successful run in the county's municipal primary elections earlier this month, a county official said.

The 360/40's real-time data collection tasks, using punch cards or a screen to the ballot instead of a back-up batch application systems to the HIS 702 terminals replacing two IBM 370s, a Remcon 2780 and an IBM 360/20 used as a remote terminal in a batch installation.

Mages said CES and used them in their June 1 election, according to John E. Emmerson, who was the executive vice president. "No one could have expected the political havoc caused by the computing error."

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"Two Much Power" Is Ineffective

(Continued from Page 1)

Following J&L's policy, IBM was a finalist because it was the current vendor, but Honeywell outperformed their programmer's concerns to handle election functions. In Maricopa County, Ariz., for example, a package of election programs was supposed to improve voter registration in time for the fall elections, but will probably not be in use in Maricopa County this November, county election officers attributed the difficulty to "some human errors, but the whole, we've encountered no problems in over 600 elections."

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News Update

Cardell and Harwood said they asked to bid for a proposed replacement of the city's IBM 360/30 over a year ago, but were assured the city had no plans to put in a replacement without first taking such bids, since it had neither the legal right nor the authorized funds to do so.

City DP manager Howard Lewis said he could not say for sure whether HIS and NCR representatives were told ahead of time that the city planned to upgrade to a larger CPU.

Lewis said no Honeywell representative had called on him from 1968, when the city chose a 360/30, to 1973. And Lewis added he had never heard from the local NCR representative until that person heard the city was planning to put in a 370/145.

In the late summer of 1973 the city installed the machine as an interim system, paying $14,734/mo on a 30-day lease. Even though Chancellor Judge Hershel Franks ruled then that the city was not in a position to purchase the machine, he indicated the city could lease it because this would be a modification of the city's contract with IBM for the 360/30, and not a new contract, Lewis stated.

But according to Reingold, the city referred back to the 1964 contract giving IBM continuing authorization to supply keypunches and other equipment. The judge may also have decided to let the city keep using the 145 because it was already installed, Reingold mentioned.

The judge's ruling still prevents the city from purchasing the 145, Lander noted. DP manager Lewis, who said the city would do better economically to purchase the machine, mentioned the city is accruing purchase credits on the computer.

The plaintiffs have argued that the credits, and the fact the system was already installed, would favor IBM in the event the city did choose to take bids and purchase a computer system.

Since installing the computer, the city has acquired 10 IBM 3270 displays and an IBM 3705 communications controller through open bidding with the agreement of the plaintiffs, Lander noted. Only IBM responded.

The city has received a consultant's report, commissioned after the installation of the machine, which stated the decision to upgrade from the 360/30 was "timely and appropriate," and that "the 370/145 provided the most realistic and efficient way to make this transition."

The 370/145 will be able to meet city needs for at least the next five years, the study predicted.

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It's economical enough to meet your information requirements for today. And flexible enough to handle the growth you plan for tomorrow.

If your company has a long range plan for information management, IDEN is the rapid transit system that can take you there. All you have to do is climb aboard.

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Federal Data Bank Uses Decried

CAMBRIDGE, Mass. — Personal freedom advocates are being threatened by intrusive governmental use of information about individuals gathered from computer-based data banks and electronic surveillance techniques, said Jerome Wiesner, president of MIT and science advisor to Presidents John Kennedy and Lyndon Johnson at recent commencement exercises.

He said Watergate was only "sympto-matic of many potential personal problems" compounded by "the expanding use of data bank and electronic intercept devices."

"If, through electronic means, access could be gained to computer memories such as those in the IRS, the Social Security system, the FBI, credit bureaus and other agencies - and that information be used to intimidate individuals - a powerful weapon for subversion exists," he warned.

Calling to mind that testimony pre- sented before Sen. Sam Ervin's (D-N.C.) Constitutional Rights Sub- committee in 1971 revealed wide spread collection of information against anti-war organizers, speakers and demonstrators, he reminded at- tendees that "modern technology has produced a subtle shift in the balance of power that the Constitution de- livered, established between in- dividual and state, and was now pro- viding the state more power than was salutary.

"The Bill of Rights has, to an un- doubted extent, been undermined by new information technology and it must be repaired by legislation," Wiesner stated.

Averting that it is "unlikely" for new technology to undo the damage, he said "further legislation is required to protect our rights from self-righteous government...and our citizens from intrusions into their private lives."

He called on the graduates to use their special understanding of tech- nology and apply it to the political and social problems to help "repair the shaky foundation on which our de- mocracy now stands."

N.J. Unemployment Insurance Program

DP System Linked to State's $30 Million Deficit

NEWARK, N.J. - A $30 million deficit un- covered in the state's Unemploy- ment insurance program appears linked to a computer system imple- mented in the '60s when unemployment was very low, according to a study made by a New York accounting firm.

The finding was part of a four-month survey conducted last December by the state Department of Labor and Industry to investigate the cause of billing errors in the unemployment insurance fund in 1971, 1972 and 1973. The study was completed last month by Coopers & Lybrand.

Planned to process 70,000 claims each week, the department's two Univac 70/45/46 couldn't handle the 140,000 per- sons who flooded unemployment offices weekly with the recession in the early '70s. Coopers & Lybrand said a hand system requiring keypunching was implemented to assist the automated system.

Failure to interface these systems prop- erly, however, resulted in $100 million being paid to jobless workers but billed to the wrong business and industrial em- ployers required to contribute to the fund, the spokesman said. He esti- mated the total lost $30 million, or $1 per worker.

The billing resulted when information concerning an unemployment payment was not charged against employers to determine their contribution rates.

Some employers with a high experience of unemployment, who normally pay a lower premium, actually were paying a higher premium, actually were paying a higher premium, the spokesman said. The cur- rent formula requires employers to pay from 1.3% to 5.6% of each employee's base pay of $4,200, with the percentage based on the firm's unemployment experience.

Moreover, employers who flooded the accounting firm indicated no criminal wrongdoing, the spokesman said, but have prompted the department to institute a new management control system for the Unemployment Insurance Program. These controls may involve computer training for some of the department's 400 employees at an estimated total cost of $10,000, in addition to a new computer, a Honeywell 370/155. Plans are also under way to institute more reliable backup systems, he said.

Department Commissioner Joseph A. Hoffman claims steps have been taken since late last year to minimize and cor- rect billing errors.

"Through improved controls and extra processing, we have been able to charge about one quarter of the $100 million to employers, and their contribution rates will reflect these changes," he said.

"We are also developing methods for properly charging the balance of unpaid payments that occurred in 1973."

Worth the Cost?

Hoffman cautioned, however, that the retrieval of uncharged payments from 1971 and 1972 may not be worth the cost required to go through the morass of unemployment-insurance fund paperwork.

In his opinion, the unemployment fund is dwindling to a "perilous condition," Hoffman said, "and the safeguarding of record confi- dentiality and the protection of individual rights of children "would meet most ACLU and parent objections and ease DSH apprehensions concerning the protection of the rights of children served by state programs for the handicapped." DSH director Richard E. White said.

Proposed in 1971 by six state agencies concerned with evaluating and planning programs for children described broadly as "handicapped," DSH was designed to study Maryland efforts in this area. The system has undergone three revisions of form and format since then, and is pre- paring to begin another.

"We look forward with force with the express purpose of getting away from the use of individual records and have asked the ACLU to participate," White said.

ACLU

The ACLU issued its report from the advisory board of DSH two months ago in protest of DSH's failure to change the organiza- tion of the DSH data base.

"While we understand and support the statistical needs of an organization de- signed to pool state information on programs for handicapped, we fail to see why any system exists on the basis of individually identifiable and recalleable materials," commented John Roemer, representative for the ACLU.

Arguing that there should be a child's individual records remains in school files, and that not all records are safely locked up in the computer, Roemer said the ACLU has continued to make recommendations and is encouraged by the organization's interest in the teachers association proposal.

From the ACLU's point of view, it is in- volved in the data reorganization involving the need for consent from parents to the inclusion of their children in such a system, the safeguarding of record confidentiality, and the potential wrong doing about children identified and classified as "sick people."

Records Destroyed

Speaking for DSH, White claimed the system does have safeguards protecting the rights of children. "A Soundex code sys- tem prevents any individual from being identified," he said. "Individual children who are handicapped only for protection and updating purposes, and all records are destroyed once a child has left a program."

"We feel the ACLU misunderstood the size and capability of DSH," White con- tinued. Apparently a small staff and a modest computer made DSH an easier system possible only once a year. DSH operates on a Honeywell 305 with 32k, one disk, six tapes, a single job stream and no off-line terminals or inquiry, according to White.

Despite disagreements and misunder- standings between the ACLU and the DSH data in the field, White recommends and agrees "a program like DSH should be closely supervised."

He looks forward to the possibilities of a system organized on the basis of the service needs of children. "Success with the system means the availability of hard data to convince local agencies for the handicapped of the staffing and program needs of kids," he said.

Simulation Aids Hot Water Study

L A JOLLA, Calif. - Hot water from beneath the earth may one day power our televisions and air conditioners, but only if some serious environmental questions can be answered first, and researchers here are calling on computer help to answer those questions.

"Certain areas of the U.S. have vast reservoirs of hot water which can be raised to the surface and converted into materials for Systems, Science & Software and others - and that information be used to intimidate individuals - a powerful weapon for subversion exists," he warned. Calling to mind that testimony pre- sented before Sen. Sam Ervin's (D-N.C.) Constitutional Rights Sub- committee in 1971 revealed wide spread collection of information against anti-war organizers, speakers and demonstrators, he reminded at- tendees that "modern technology has produced a subtle shift in the balance of power that the Constitution de- livered, established between in- dividual and state, and was now pro- viding the state more power than was salutary.

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ACLU, Parents Ask Restructuring Of Data System for Handicapped

By Edie Holmes

ANNAPOLIS, Md. — In response to problems from the American Civil Liberty Union, parents and education professionals, the Data System for the Handi- capped (DSH) here is considering a change in its data base from categoriza- tion of individual children to the kinds of services needed by and rendered for children.

Proposed by the Maryland State Teachers Association, this change in the organization of the DSH data base "would meet most ACLU and parent objections and ease DSH apprehensions concerning the protection of the rights of children served by state programs for the handicapped," DSH director Richard E. White said.

Organized in 1971 by six state agencies concerned with evaluating and planning programs for children described broadly as "handicapped," DSH was designed to study Maryland efforts in this area. The

system has undergone three revisions of form and format since then, and is pre- paring to begin another.

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GAO Study Pinpoints Working CPE Tools

(Continued from Page 1)

In nearly identical language, ink said Office of Management and Budget (OMB) circular 35-A is being revised to require that agency managements "must evalu- ate existing systems and make efforts to improve by employing new technology before they consider the acquisition of systems." To which an independent CPE consul- tant could only add, "That advice goes unheeded by the government."

Copies of the report can be ordered from GAO, P.O. Box 1020, Washington, D.C. 20013. Requests must include the publication number (B-115369), date of issuance (June 3, 1974) and payment in full, a GAO spokesman noted.
It's too late to enter the "Win-a-free-Interdata-plant-tour-or-$1000-in-cash-contest." But there's plenty of time to be a judge and earn big money. A giant, three foot, under $10,000 bill. This rare bill is the only one of its kind in existence and it's yours to proudly flash around.

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Interdata 7/32 contest ballot.
Two DPers on Loan Spark Urban League's MIS Plan

By Nancy French

NEW YORK - "As a professional corporate entity engaged in serving people, we have a responsibility to perform as well as any industry," said National Urban League executive director Vernon E. Jordan Jr. It was for this reason that the league went to big business to find the expertise it needed to develop a new management information system to maintain tighter control of its $20 million annual operation.

It sought help and got it from the First National City Bank, which loaned Willis J. Else, vice-president of its real estate industries division, and the J.C. Penney Co., which loaned Thomas F. O'Rourke, its senior systems analyst, both at full salary.

Their goal: a management information system combining the principles of a computer information system with decentralized management.

Widespread Organization

As the nation's largest predominantly black civil rights and social service agency, the Urban League employs 2,500 professionals in 102 local Urban Leagues across the country and is served by 25,000 volunteers. It has five regional offices, a research department and national headquarters here.

To direct this far-flung operation, Else said he set out to create a management information system with incentives that would encourage middle managers "to serve agency goals" rather than concentrating exclusively on the operations of their own particular departments.

Else quickly pulled together a seven-member team to study departmental decision-making to determine just what information managers needed to make knowledgeable decisions.

Nine Systems Emerged

Nine different management information systems emerged. They concerned budgeting, personnel records, payroll, accounts payable, general ledger, funding long- and medium-range planning and program development.

Else designed and implemented the management information system, determining the type, content and timing of reports that would go to each manager, and established procedures for gathering the information that would be contained in them.

O'Rourke then stepped in to select the computer that would best suit the league's needs.

O'Rourke recommended an IBM System/3 Model 10 to handle personnel, funding, accounts payable, general ledger and payroll. Future plans include automating the league's local affiliate reporting system, the budgeting system and a furniture and equipment inventory to calculate depreciation for the league's accountants.

Helps Middle Managers

The new MIS has allowed tighter control of the league's budget and greater accountability to funding sources. Most important, according to John Watkins, a league spokesman, "it has made decentralized management possible — by providing middle managers with up-to-date, accurate information on which to base decisions."

Improved affiliate reporting and participation in league planning will give the national office more accurate research on the needs of 102 league communities and what to do about them. In turn, comparative reports of affiliate activity should create incentives for more effective local league performance, Watkins said.

Among the league's activities are programs aimed at recruiting and training minority members for law enforcement careers, and giving family planning advice and running an exchange program between successful black executives and black colleges. It also maintains a national skills bank for businessmen looking for black talent, runs citizenship and registration programs and serves as an advocate for the poor before Congress and federal agencies.

"[MIS] has made decentralized management possible — by providing middle managers with up-to-date, accurate information on which to base decisions."

The league's educational programs have resulted in alternative schools in nine cities to educate and graduate young people who dropped out of the local school systems. The league studies housing problems and has provided seed money and technical assistance to local Urban Leagues in Grand Rapids, Mich., and Phoenix, Ariz., for example, for low-cost housing projects.

As for industry-league cooperation, the league is committed to it. "We need each other, and the country needs our cooperation if its citizens are to prosper to the fullest social and moral extent," Jordan said.

TI announces four new computer products

980B minicomputer... powerful general-purpose computer for data communications and scientific data processing

Qty. 1—$4,975 with 8K memory.

960B minicomputer... process control computer for manufacturing and testing systems

Qty. 1—$4,350 with 8K memory.

MOS memories

8K—$2,000

16K—$3,500

24K—$5,000
New price/performance standards!

900 Series Minicomputers

These two new additions to the TI computer line use memory featuring the new generation TI 4k RAM plug-in devices, error correction/detection logic and fault isolation indicator lights...achieving new standards in reliability and maintainability.

System architecture accommodates direct interfacing with high and low-speed devices, for a broad range of applications.

DS330

The new DS330 Disc System yields a dramatic increase in data storage capability previously not available in minicomputer systems. One to four drives per controller provides 100 to 400 million bytes of data storage.

**Processing Terminal System**

Ideal for data collection and retrieval systems, this versatile and expandable interactive terminal ensemble includes up to eight Model 913 CRT displays linked to a powerful controller/processor. The programmable keyboard provides instantaneous operator/terminal dialog, to achieve powerful operator prompting and dialog techniques that are impractical with other terminal systems. The Processing Terminal System's front-end processing ability relieves host computer loading.

These and all TI products and systems are backed by extensive user-oriented software, a nationwide sales and service network, and the TI-CARE* Computer Aided Repair Dispatching System. For more information on TI's new price/performance leader, call your nearest field engineer in the sales and service network, and the Loan Association of Lincoln and the Hinky Dickys supermarket chain [CW, Feb. 13] that is tapping "a new source of deposits - deposits that might have gone to local banks."

He told the Utah Bankers Association meeting theoretical arguments about implementing EFTS are important, but it is also vital that bankers "look around and see what we must do to protect and increase our share of the market by laying the groundwork for EFTS."

Since granting all financial institutions direct access on equal terms to automated clearinghouses would be the first step in granting all financial institutions the power to offer checking accounts, and since banks have given no indication of willingness to relinquish any of their special privileges in the areas of deposit interest rates and reserves, "banks must oppose

D传承 previously not available in dramatic increase in data storage

...that he could start program in April, but officials at Career Training Institute (CTI) assured him there were no class

groupings in keeping with the school's policy of individualized instruction.

"Before I signed up they told me how bad it was going to be, how I was going to have expert teachers, loads of people actually working with the computers and how I was sure to wind up getting a good job," Buchan recalled of his registration for a "Boston Globe" article related to its recent investigation of vocational schools [CW, April 17, Jan. 12].

"I really feel stupid I could have been snowed so badly."

His diploma, in the name of the Andover Institute of Boston with which CTI had merged, certifies Buchan had "satisfactorily completed the prescribed course of training, classroom lectures and practice in computer operation/computer programming."

The Andover Institute of Business in Boston, the Globe pointed out, is not related to the Andover School of Business in Andover, Mass.

**No Final Exam**

The diploma's wording is off on several counts, Buchan said. His course dealt with programming, with no instruction on computer operations. As for "satisfactorily completing the course," Buchan said he never took a final exam, and if he had, "it would have shown I didn't know half the material I was supposed to know."

The school's training, he said, consisted of the students listening to tape recordings on computer programming while reading programming manuals. No one took attendance.

"It was no way to study any subject like that," he commented. "It was like studying on your own in any library."

Nobody To Turn To

Buchan had been told there would always be a qualified instructor on hand to supervise the students listening to tapes, but halfway through his course, the instructor was sent out for half the day to teach another DP course, he said.

"We were left all by ourselves. If we had a problem or a question, there was nobody to turn to," Buchan recalled.

There was no computer at CTI, Buchan said. The school rented time on a marketing company's IBM 360 across town.

**Worst Day**

Students in Buchan's course were supposed to have access to the computer from 11 a.m. to 1 p.m. on Friday, "which was the worst day of the week because they were doing payroll," Buchan remembered.

"We often never got it until 11:30 or 12:30," he said.

The students put in cards for a computer and that was it, he stated. In his year-long course, Buchan said he had three programs compiled and no executions.

Although his present clerical job is unrelated to DP, Buchan said he is still interested in working with computers and would like to go back to school to study the subject once more.
Editorials

A Welcome Performance

The dearth of statistical guidelines on what makes up an effective DP installation may be one of the key factors in holding back DP efficiency. Therefore it is welcome news that the world's largest computer user -- the Federal Government -- is going to try to develop such guidelines and share them with the general computer user [CW, June 12].

With a large base of different computer systems and workloads, the General Services Administration's new computer performance evaluation office should be able to develop some statistical norms for efficiency.

And through its evaluation of these many different types of systems, the office will probably be able to come up with many "tips" or operating procedures that mark particularly efficient installations.

By applying these operating procedures, the average shop should be able to improve its efficiency, and by using the statistical measures, every DP shop should be able to see how it is doing in the area of efficiency.

Hopefully this will allow all users to get the maximum performance out of their equipment and will make upgrading a logical, not emotional, procedure.

Learning to Share

Most governmental computer applications are common to all state and local governments, but to date most governments have developed applications without much "cross-pollination."

While one state or city might have perfectly acceptable systems and standards for applications or for the courts, most other state and local governments will develop their own systems for these jobs instead of adapting existing programs to their needs.

This results in duplication of effort, higher costs, higher taxes and a general disenchanted with computer applications in the state and local government areas.

Two groups are attacking this problem -- the Government Management Information Sciences Group and the National Association of State Information Systems -- and while there have been some initial successes, the record is largely one of failure.

All state and local government users, however, owe it to the taxpayers who ultimately pay their bills to try to improve the record in this area.

Sharing of programs can reduce DP costs in almost every area and it is particularly important that governmental agencies supported by public funds take advantage of every money-saving idea available.

Minicobol, Now!

Users yearning for Cobol for Digital Equipment minicomputers grow in number every day, but DEC has postponed offering Cobol month after month, year after year.

DEC presently owns marketing rights to an Australian Cobol processor that runs on a 16K PDP-11 [CW, March 27] ... and recently at the Decus meeting in Boston, Capt. Grace Hopper gave DEC Vice-President Gordon Bell a four-in. thick stack of documentation, verification routines and standards for Minicobol that her group in the U.S. Navy has compiled.

In the same edition, Daniel D. McCracken's excellent article discusses the denial of essential rights on the domestic scene.

Can we reasonably then take the moral position of guarding privacy, etc., domestically and yet export the very tools which allow greater control and exploitation of the masses in the USSR? I think not!

The euphoria of detente seems to have glossed over the fundamental differences in our two systems (USSR vs U.S.). Exporting our computer technology to the USSR will not liberalize its system, but may well have a long-range negative effect on the personal freedom of the people.

The Orwellian concept of complete control will become technically possible.

The real question is: When will DEC catch up to the real world?

True, Minicobol is just an abbreviated subset of Cobol, but with eventual and enthusiastic success.

Rigo stated that private schools seemed to have a legitimate role to play in our profession. Private schools not only seem to but now do fill a role which is to train the DP professionals of the future.

I deeply feel education is the only way to higher professionalism in data processing. The local private data processing school is now or will be in the near future the best source for current, exact training for DP professionals.

Robert E. Sennet Streamwood, Ill.

Security 'Test' Needed

Surely those who want to punish students who break their "security systems" are wrong [CW, May 22]. A security system that is not safe from students is scarcely likely to be safe from professional criminals, spies or saboteurs.

Would it not be better to give credit for breaking the system, so that deficiencies can be brought to light and corrected before harm is done? Universities thus render a valuable continuing service to the community and to their students who by reason of their experiences will be well-placed to recognize actual and potential weaknesses in those DP systems.

D. Ibbetson Streamwood, Ill.

Exporting Computers Exploits the Masses

It is altogether regrettable that after what has been an active look at the exportation of American technology to the USSR, Computerworld saw fit to print an articole cartoon on the subject in the June 5 edition.

In the same edition, Daniel D. McCracken's excellent article discusses the denial of essential rights on the domestic scene.

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Letters to the Editor

Local DP School to Be Best Training Source

Regarding the article by Joseph T. Rigo titled "At Last...A Few Good Words on Private DP Schools" in the May 8 issue of Computerworld: Rigo did say a few good words but a few more could be said and even a fact or two.

Rigo stated that private DP schools accept students who can't do the work and who have high dropout rates. One school I know of here in the Chicago area is placing over 80% of its graduates and the employers are happy with the students. The school has a dropout rate of around 10% in its programming course. The school has a testing routine that is not easy and requirements that end up turning away about 60% of those who take the tests.

In the past few years public pressure has brought about extensive change in the Midwest. Here in Illinois the Department of Public Instruction has been very active. The Federal Government has also added its voice and pressure in closing schools and promoting improvement. This, together with controls developed by the schools themselves, has brought about an unbelievable change.

The school mentioned above is just one. Others also have fine records. The private DP school business like all new and evolving businesses is just now learning how to teach data processing and make a profit.

Rigo said private schools seem to have a legitimate role to play in our profession. Private schools not only seem to but now do fill a role which is to train the DP professionals of the future.

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One Can Do Anything

I simply want to formally con- centrate on the continuing federal and professional interest in the testing programs of the schools mentioned above. A testing program is a must of any school that wishes to consider itself particularly efficient installations.

L.G. Rogers St. Louis, Mo.

Dependent Consultant

I have always felt the artificial stratifica- tion of responsibility in our field has been detrimental. Simply put, why introduce communications and all its at- tendant problems so that five people can do a job, when for a fraction of the cost, you can get the job done better with one good person who will, by defini- tion, have the perspective of the whole problem all the time.

Let me close with a caricature of this idea.

A secretary rushes into his boss' office with the announce- ment that Lindbergh has made a solo flight across the Atlantic. No reaction. She repeats her "scoop." Still no reaction. After her third attempt with great ex- aperation, he looks up and says: "Miss Jones, what you have told me is not news. One man can do anything he wants to do. When a committee makes a solo flight across the Atlantic, that's news!" Marvin Ginsburg Washington, D.C.

Security 'Test' Needed

Surely those who want to punish students who break their "security systems" are wrong [CW, May 22]. A security system that is not safe from students is scarcely likely to be safe from professional criminals, spies or saboteurs.

Would it not be better to give credit for breaking the system, so that deficiencies can be brought to light and corrected before harm is done? Universities thus render a valuable continuing service to the community and to their students who by reason of their experiences will be well-placed to recognize actual and potential weaknesses in those DP systems.

D. Ibbetson Streamwood, Ill.

Letters to the Editor
Private Schools Stress Practical DP Training

By David J. Aber

One — and one from the newly offered contract are shown above.

“Burroughs did not want to be faulted, as it was in the past, for any reason. This worried me,” says Alan Taylor, CDP, computer coordinator for District Five, in western New York. “They have not apparently been doing PM at all — but had been disconnecting the machine sitting without power for any reason. 

It is ironic that most colleges and universities in our area don’t teach a systems course,” says Alan Taylor, CDP, computer coordinator for District Five, in western New York. “They have not apparently been doing PM at all — but had been disconnecting the machine sitting without power for any reason.

“While Burroughs, while charging for rental terms and evaluations,” rather than us going to them. I am sure Kapur has found a way to help upgrade the education professionals, but that these ‘pillars of society’ which appeared in the Crisis” which appeared in the June 19, 1974, edition of Computerworld, 797 Washington Street, Newton, Mass. 02160.

The two sets of contract terms, one from the old contract — a 1971 one — and one from the newly offered contract are shown above.

The difference appears to be that Burroughs, while charging for maintenance, is exempted from responsibility if the maintenance is delayed.

With the machine sitting without power for any reason, the user has no choice but to buy the machine to work. 

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next room.

Plucky had a great, precise mind that honed in like a microscope on the details of the most intricate problem. As a programmer, those qualities were invaluable. As a manager, though, his interest in the microscopics began to come through not as a skill but as a bad case of tunnel vision.

Nobody cared in a staff meeting that Plucky knew the insert-through-mask instruction beat the store field all hollow. It just wasn't relevant to understanding the "big picture."

'A Piece of the Action'

Seaborne Systems, at that time, had a contract with a major municipal port to develop a computerized inventory system. And Plucky, who had just made management about the time a change in the contract broke, was given a piece of the action.

In fact, he was given a very large piece of the action. Plucky's boss, who had been given responsibility for defining and monitoring the change, was swamped. He delegated the whole thing to Plucky. It was sort of like trying to stand up in a 30-foot surf.

Maybe they should have let Plucky sit on the edge of the pool for a while, and move gradually into the water. But he took the plunge before he even had time to think about it.

The first problem that hit him was that the computing equipment had to be enlarged. The change in the contract had necessitated some major functional aspects, and the old hardware just wouldn't back it.

But that meant reprogramming what had already been done. Fortunately, it was in Cobol and a total rewrite wasn't necessary. Still, Brand "X" Cobol differed from Brand "Y" in more than just environment. When Plucky broke the news to the programming manager, he learned a new risk of being a manager—a loss of popularity.

Plucky worked through that. Finally he got Plucky into the contract, although it wasn't the facility management part of the contract.

The Sociology of Computing

Plucky's popularity in the programming department fell another meganotch.

Johnson Systems provides the most widely used and comprehensive computer utilization reporting system in the industry.

And there are a multitude of good reasons why.

We did not try to "second-guess" your installation's reporting requirements. The system features a flexible report generator which allows you to design your own utilization reports, so there is a set of control cards defining a host of standard reports to complement your repertoire of custom-made reports.

Our OS version accepts the SMF data base provided by MFT, MVT, VS1, and VS2 operating systems. In addition, the report generator simultaneously accepts our standard DOS data base.

A DOS-only version collects computer utilization data available via the job accounting option in the supervisor. The report generator subsequently processes this data according to user specifications. Accounting data available from GRASP and ASAP spooling systems can be processed too.

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The system has been designed to maximize ease of operation. It's so simple — people use it.

We did not try to "second-guess" your installation's reporting requirements. The system features a flexible report generator which allows you to design your own utilization reports, so there is a set of control cards defining a host of standard reports to complement your repertoire of custom-made reports.

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And there are a multitude of good reasons why.

The Sociology of Computing

One of my favorite people on that job, seeing Plucky coming, would say, "The sky is falling... the sky is falling." It was that bad.

A Happy Ending?

There ought to be a happy ending to this story. I ought to be able to say, "Plucky realized he wasn't cut out to be a manager, and turned in his key and returned to his coding."

But I can't. Plucky was one of computing's first practicing technologists, his programs hummed like a rotary engine. He was quick, accurate and thorough. His programming scale of 10 was a good, solid 9.

When we have been training programmers for 14 years and have an outstanding reputation of training qualified personnel, I had to take pen in hand and set the record straight. I just wonder if Gresham's law could apply to the pressing need for upgrading the educational evaluators who have the "algebra factor."

David Aber is director of education for a computer institute in Pittsburgh.
New Attitude on Support?
Warranty Promises Free Fixes 'Forever'

By Don Levin

LOS ANGELES — Some indication of the understanding that philosophically should exist between every software house and every client has been put in writing by Unicorn Systems Co. with its Software Forever Warranty.

Unicorn is a custom software house that generally develops large on-line systems for its clients. But the principles set forth in the warranty form could and, according to some observers, should apply across the board in any software sale. The company makes a good argument that this is more than a marketing gimmick.

The warranty certificate states simply that anyone buying a major system, Unicorn will provide the warranty service across the board in any software sale. The warranty form could and, according to some observers, should apply across the board in any software sale.

The warranty certificate states simply that anyone buying a major system, Unicorn will provide the warranty service.

The warranty ceases "immediately" if and when the user has voided the warranty, a bill will be submitted for costs incurred and a bill will be submitted for costs incurred and the product will be returned to the manufacturer. In addition, the user has voided the warranty.

No Third Party

Transferring the warranted program to a third party is one way the client might void the warranty. Modifying the environment specified for the program is another. If a client is willing to work on a problem and it ultimately determines that the cause of the problem was not in Unicorn's software, the company will charge the client for costs incurred and time spent. Similarly, if in the course of solving a problem, the user has voided the warranty, a bill will be presented for services rendered.

Maynard, Mass. — Another real-time, multiprogramming software system designed to operate on the full range of PDP-11/40 computers has been announced by Digital Equipment Corp. (DEC).

Designated RSX-11M, the minicomputer-based system can be used for on-line program development and concurrent execution of real-time tasks.

The system is upgradable to DEC's RSX-11D software and can be used for real-time multiprogramming and background/foreground tasks.

It is "ideally suited" to real-time data acquisition and control jobs where smaller PDP-11 configurations are adequate, a DEC spokesman said.

Complete Protection

In systems configured around the PDP-1/40 and PDP-11/45 CPUs, the software takes advantage of the memory management hardware as a system generation option. This provides protection of the operating system and individual tasks; such protection is particularly valuable in background/foreground operations and during on-line program development.

RSX-11M also has data communication subroutines. Both synchronous and asynchronous communication modes are supported by the software; asynchronous communication devices are supported by the software.

VM/370 Support Listed

NEW YORK -- DP managers using IBM's Virtual Machine Facility have a capsule view of VM/370 software available from one vendor with the Quick Guide from Standard Data Corp., 1540 Broadway, 10036.

It's wonder, then, that the MMS General Ledger is the World's No. 1 seller. Because it makes sense to get the best corporate financial reporting system. And that's the MMS GENERAL LEDGER!

MMS General Ledger Stands Above the Crowd.

The MMS General Ledger is the choice of more than 100 of the country's leading corporations.

The system they selected isn't merely a "software package," however. It's the MMS General Ledger which offers unusual flexibility because of unique data base design. And it can be used in DOS, O/S, IMS, or even TOTAL. Best of all, the system is accurate, efficient, and reliable.

It's a wonder, then, that the MMS General Ledger is the World's No. 1 seller. Because it makes sense to get the best corporate financial reporting system. And that's the MMS GENERAL LEDGER!
Iconoclasts are necessary to produce change in inertia-ridden academia. Perhaps the NCC session entitled “Business Data Processing Education – A Decade of Failure” had that goal. If so, it failed.

Most of the panelists spoke from a background of igno-

rance about prior work on curricula. They supported con-

clusions with statements such as: most of the data processing instructors with whom I have spoken...”

Certainly, business DP education needs consistent re-eval-

uation. However, improvement results from analysis of academic programs of proven quality as well as analysis of failures. Published guidelines developed from such analyses such as... are available. However, the speakers at this NCC session seemed oblivious to their existence.

The nationally recognized guideline for computer science curriculum is “Curricu-

Iumin 68: Recommendations for Academic Programs in Computer Science,” Com-

munications of the ACM, Volume II, No. 3 (March 1968) Pages 151-197.

That report provided recommendations for undergraduate programs. Graduate programs in computer science were discussed and some recommendations were presented for the development of masters degree programs. Ways of developing guidelines for doctoral programs were discussed, but no specific recommendations were made.

The study preceding this report lasted two years; 12 committee members were involved and 64 persons provided evaluations before the final publication.

Curricula Guidelines

After widespread acceptance of Curricu-

lum 68, ACM undertook a similar task for business information systems.

Two reports were developed. The first was “Curriculum Recommendations for Graduate Professional Programs in Infor-


The second report was: "Curriculum Recommendations for Undergraduate Programs in Information Systems," J. Daniel Couger, ed., Communications of the ACM, Volume 16, No. 12 (December 1973) pages 772-749. The development and evaluation for those two guidelines employed the same rigorous process utilized in Curriculum 68.

A two-year program in business DP was developed by the national advisory com-

mittee for computer curriculum of the American Association of Junior Colleges. The guidelines were published in 1970: The Computer and the Junior College: Curriculum, Richard W. Brightman, ed., AACC, One Dupont Circle, N.W., Wash-

ington, D.C. 20036.

The advisory committee included representatives of four-year schools. Having served as one of those representatives, I can attest to the careful procedure utilized for the development of the junior college guidelines. Perhaps most important is the planned compatibility between those guidelines and the ACM under-

graduate curriculum recommendations.

For Teachers

One of the speakers at the NCC session concluded her presentation with a plea for a publication to aid teachers of DP. Two publications of this type have been in existence for many years. One is the Journal of Data Education, 516 Mass Ave., Truth or Consequences, N.M., 87901 ($12 for eight issues per year).

Unfortunately this publication has de-

teriorated in quality. Whereas the typical 1974 issue was comprised of 25 to 30 pages, the typical 1974 issue was one-third to one-half that size. This month’s issue has only three articles. Hopefully, the earlier quality of this journal will be restored next year.

The other publication is Computing Newsletter for Instructors of Data Proc-

eessing, Box 7345, Colorado Springs, Colo. 80933 ($11 for nine issues per year). In its eighth year, this publication has sub-

scribers in more than 400 colleges and more than 200 industrial training depart-

ment.

The newsletter describes computer cur-

riculum, new system development tech-

iques, pedagogical techniques, faculty education opportunities, new textbooks and computer programs which may be used for instruction. During the past three years more than 150 computer pro-

grams have been described. In each case the name and address of the developer are provided, to enable an instructor to ac-

quire the documentation and the pro-

gram.

Bias Admitted

Because I serve as editor of this publica-

tion, I must admit a bias in its direction. Nevertheless, the lack of awareness of publications of this type, as exhibited in the NCC session, warrant description of these two publications in this column.

The NCC also included a session on computer science education. In great con-

trast with the session described above, speakers were thorough in their evalua-

tion of efforts of predecessors. Also, their papers cited earlier work and provided an important contribution to the literature on the subject.

Such contrast is embarrassing for those of us whose primary interest is business data processing.

Perhaps the program chairman for next year’s NCC will insist that the speakers for the business DP session are as well prepared as their computer science col-

leagues.

Couger is professor of computer and management science at the University of Colorado.
Why Leaders Win Price Wars

Part of being a leader is to overcome price competition. A leader need not be the largest or the oldest company in its field, but it's the one that stands out because it is recognized as the best. It wins price wars because its proven performance for excellence is not vulnerable to price-cutting.

A leader is also a living — and very healthy — testimonial to the effectiveness of an important marketing principle: That nothing will replace proven reliability of product.

Perhaps the main reason more manufacturers do not sell on value is that it requires a product that has value.

It requires something else, too — the lonely courage to stand out from the crowd, to make your products even better, year in and year out, regardless of the opportunistic competition. Perhaps this is the rarest quality of all. It can only be called Leadership.

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A good product deserves a good package. Flexydisks come in compact, tabulated library 5-packs. They save on storage and record-keeping, and make neat desk-top files. They're a great time-saver. A supply of color coded labels is also included for easy job identification.

Drop us a line and we'll send you complete details on Flexydisks. BASF Systems, Crosby Drive, Bedford, MA 01730.

You're already paying for BASF quality, you might as well have it.
**Support Start/Stop Terminals**

**Chicago School System Puts Time-Sharing to 'Music'**

By Patrick Ward and Ronald A. Frank

CHICAGO—Who operates in-house time-sharing systems on IBM CPUs often can save mainframe storage by utilizing Music instead of IBM's TSO.

Music, McGill University System for Interactive Computing, originally developed by IBM with Lockhead, was enhanced by McGill University and is now marketed by IBM as an installed user program (IUP).

Music’s ease of use from the user’s point of view and its lack of overhead made it the Chicago Board of Education’s choice as the operating system for a 255B IBM 370/165 handling over 100 instructional terminals.

“We have found nothing that can even match, let alone beat it, for our application,” commented Bernard J. Taheny, consultant for computing instructions systems for the board.

The board chose RAX, the predecessor to RACF, for their in-house system for its first in-house instructional computer, an IBM 360/40. As the workload grew, Taheny and Ted Gradoff, the board’s consultant for computers, looked at Xerox systems and Univac’s Exe system, but felt they were “too powerful” for handling a workload of student programs.

**Had What They Wanted**

The board found that McGill university was enhancing RAX, now called Music, which also allowed the enhancements they wanted, such as 2314 support and Cobol compilers.

The board had looked at OS and TSO, “and IBM’s estimates, ignoring response time, which they didn’t figure, they could meet under any circumstances with a 145, were that they would require a TSO region of about 76K,” plus the memory, which would add over another 100K, Taheny mentioned.

Additionally, the OS system would require a systems programmer to maintain it, plus a full-time operator. The Music system requires no operator and no systems support, Taheny stated.

When supplied by IBM, Music costs $1,190/mo for 12 terminals.

The Chicago system supports Fortran, Cobol, Algol, PLC, basic and assembly language, Taheny said. Students access IBM mainframe systems.

**Burroughs Banking Terminals**

**Handle Off- or On-Line Work**

DETROIT, Mich.—Burroughs has added two banking terminals to control financial transactions at teller input to a CPU. The TRI100 can later be field-upgraded into an on-line TTI00 system as a bank’s volume increases.

**Have Microprogramming**

Both terminals incorporate microprogramming which simplifies field modifications. In this regard, Burroughs is not alone, primarily IBM 1050s, but also 2741s. Additionally, there are six Datapoint 3300 terminals used in guidance tests, and some Teletype devices in a suburban school.

The system uses an IBM 3705 communications control unit with 80 simultaneous porteaus in emulation mode.

Response time averages around four seconds on the Datapoint units and the 2741s, Taheny said.

**Xerox 'Iden' Supports CRTs on 530 Mainframe**

- EL SEGUNDO, Calif.—A distributed processing system for the Xerox 530 computer has been introduced by Xerox Corp.

The Xerox Interactive Data Entry Network (Iden) is a terminal-oriented system for data entry, validation and inquiry. It can operate with Baseline 2000, Xerox Sigler ADM-1 and other Tyly-compatible displays that can interface with Xerox systems.

**Designed to simplify the creation of an interactive network by any industry whose business information is dispersed in multiple locations, Iden is particularly applicable to the manufacturing, wholesale/distribution, banking, government, transportation and insurance industries, according to Xerox.**

Iden combines with the Xerox satellite processor and the local batch processing capability on the 530 computer to form a complete distributed processing system. Information entered into Iden from local terminals can be processed, using the local processing capability of the 530 computer. This processed information can be retained and utilized locally, or it can be sent to the host computer for further processing or central storage.

**IBM Interface**

Host computers include the Xerox Sigma 6 or 9 computers and the Xerox 560 computer. Iden can also operate as a preprocessor for IBM 360/370 computers. The IBM interface is accomplished in accordance with the Honeywell Synchronous Multileveling Protocol. Iden is a companion product to other host computers operating in this mode.

**The basic Iden configuration consists of 32K words of memory, expandable to 256K words. Additional memory can operate with Iden to support additional CPUs and disk storage devices, a communications controller, a magnetic tape unit, a network of CRTs and a keyboard printer. Concurrent operation of Iden and multiple job entry requires additional memory and an additional operator’s console.**

The Xerox 530 computer, a 16-bit processor, was designed specifically for data acquisition, communications and file processing applications. Iden operates on the 530 system under the Real-Time Batch Monitor (RBM) operating system. IBM supports 16-bit operating languages:

- Extended Symbol (the 530 assembler language), RPG II, Cobol and Fortran.

The basic Iden software including operating system with minimum application programs costs a user a one-time license fee of $4,500. The basic hardware package to run Iden includes an 8K 530 CPU, 200 card/min reader, 350 line/min printer and one 800 bit/in. tape drive for $52,000. An additional 24K of memory needed to run Iden would add $16,500, a Xerox spokesman said. Iden is available immediately from the firm at 701 S. Aviation Ave., 90344.
If you’d like to avoid data communications hangups, then communicate with us now!

If you’re now involved with data communications (or will be soon), this unique seminar will teach you what you need to know about this complicated area.

This is the seminar that wraps it all up for data communications users. It’s called Data Communications — The Executive Imperative, and it covers both fundamentals and application-oriented subjects ranging from transmission theory to terminal selection techniques. It gives you what you need to know to plan effective communications systems in two busy days. And that’s saying quite a lot. Because data communications is a complicated area with many problems for the user. Proper planning is a must. And this seminar tells you how to go about it.

Some of the things you’ll learn:
- Basic terminology of the field.
- Tariffs and cost-savings.
- Effect of transmission problems on a network.
- The modem — how it works and what it does.
- Terminals and their performance.
- Multiplexing and data concentration.
- Line-control software.
- Network organization and design.
- How to upgrade to a bigger system.

Free reference materials and continuing updates

As a participant in the Data Communications Seminar, you’ll receive a valuable set of reference materials prepared by the ICC Institute. These materials include a comprehensive 2-volume looseleaf outline of all course materials, a copy of “Data Modem Selection and Evaluation Guide” by Vess V. Vilips, a “Data Communications and Teleprocessing Dictionary” and a line-cost calculator.

And that’s just the beginning. You’ll also receive free update materials for a full year! This is more than just a seminar. It’s a continuing reference service as well.

Seminar Leader is Dr. Dixon Doll, a highly respected teleprocessing consultant. Dr. Dixon Doll leads the expert faculty at this seminar. He has his Ph.D. in Systems Engineering from the University of Michigan and many years of experience in this field as a consultant and educator. He has performed work-study with communications techniques at M.I.T., taught graduate-level computer systems design, and has served as professional consultant to such firms as IBM, Raytheon, ICC and MCI. Dr. Doll is in charge of our faculty of experts, and takes an active part in the entire seminar.

You should attend this seminar, if...
- You are currently involved in data communications on a management or operational level and wish to expand your knowledge of the field.
- Your company will be going into this field in the near future.

Charges and Enrollment

The total cost for this two-day seminar is $350, including workbook, reference materials, year-long update service, luncheons and continental breakfasts. This cost does not include hotel rooms, if necessary.

To enroll, look over the schedule below, fill out the coupon and send it in. Remember, enrollment must be limited, so don’t wait until it’s too late!

If you’d like to make sure we hold your space, just call in your reservation before sending the registration form. Call Rosemary Jones (collect) at (617) 965-5800.
On-Line System Lets University Spread Uses Throughout State

BURLINGTON, Vt. - The University of Vermont is spreading an academic computer around campus and throughout the state through the use of data terminals.

The terminals are on-line to a large-scale system in the Academic Computing Center, and the university has molded the computer into a integral, readily accessible part of the educational process.

The Regional Medical Program, which collects data on Vermont hospital patients and produces numerous tables, is using the computer terminal as a control device, in one application.

In Waterbury, about 30 miles away from the computer here, Project Crash (Countermeasures Related to Alcohol Safety on Highways) enters the latest drunk driving statistics into the system and, on demand, receives updated driver profile information for use in public education and enforcement.

Peculiar Needs

The remote location is adapting the computer's capabilities to its requirements. The selection and use of an on-line terminal for these applications was based on needs peculiar to its objectives, environment and available funds.

Since relative speed, noise level, compactness and, to some extent, economics were factors, the university installed NCR 260 data terminals, thermal printers with typewriter-like keyboards that operate at 30 char./sec, a spokesman said.

Of the 42 remote users in the Academic Computing Center network, 11 have NCR 260 terminals. The others work with teletypewriters, which print at 10 char./sec; 130 char./sec CRT display units; and plotters for engineering and drafting problems.

For Abets, a research project in the

At the Academic Computing Center at the University of Vermont, a staff member operates an NCR 360 data terminal.

phase-out stage that proved alcohol is indeed a driving problem, noise was a factor in selecting the NCR terminal. At Abets, people work in a relatively small office and one can operate the terminal without disturbing the other, the spokesman noted. The desk-top unit also occupies relatively little space.

In at least one application, portability of the NCR terminal has been an asset. A single unit is shared by nine staff officers of the Academic Computing Center who wheel it from one office to another.

The Academic Computing Center leaves the choice of terminal up to the user. Organized in its present form on July 1, 1971, the center is a service organization offering computer time to departments on campus and education-oriented groups miles away.

Who else can provide a fully programmable intelligent data terminal that contains a full-scale minicomputer (like a PDP-8E), a CRT display, a 4096 12-bit word expandable memory, a selective type keyboard with up to 51 additional function keys — and has the capability to communicate with practically any computer under any line discipline or protocol?

The MEGADATA SIR-1000 POWERSCOPE has all these features and many more. Its versatility has been demonstrated in such applications as:

- Message Switching
- Reservation Systems
- Inventory Control

Peripherals are no problem either — the SIR-1000 can operate with IBM compatible magnetic tape, floppy disks, dual cassettes, card readers, badge readers, paper tape readers and punches, and both low and high speed printers.

So why not find out more about the MEGADATA SIR-100 POWERSCOPE data terminal. It emulates, calculates, formats, translates functions and data — and may well be the answer to your terminal problem.

CIS can ship a new 370 today!

That’s right — today!

Literaly!

Unusual? Yes, but we’ve already done it for over 50 major users in the United States and Europe.

- Sale,... or Lease,... or Trade
- Investments Tax Credit
- IBM Maintenance and Warranty Qualifying... Guaranteed

CIS SELLS AND LEASES

CIS has an extensive inventory and on-order position with IBM which enables us to ship a 145, 158 or 168 to you when you need it by IBM serial number and factory order number. Ask if yours is in inventory now and can be shipped immediately any month throughout 1974 and 1975. The next open delivery dates for 145s and 168s begin in June and July respectively and continue until mid-1975. Specifications are available upon request and can usually be altered to meet the user’s needs prior to delivery. CIS also has two used 158s available, one in August and the other in December.

Other systems ready for immediate shipment are 370/150’s and 360/40J. DE 40G and 30F. A 370/165K is scheduled for mid-summer 1974. Various peripherals are also available. Again, all specifications can be altered.

We offer several leasing plans, both long and short term, so that doing business with CIS permits you to meet your financial planning needs — as well as your data processing needs in the most advantageous manner. Applicable Investment Tax Credits may be passed through CIS to the customer or, in the event of a lease, retained by CIS in accordance with the lessee's wishes. If you have a book-value problem with your present system, CIS can help you solve it by accepting a trade of the system against the purchase or lease of replacement equipment.

CIS BUYS

CIS will pay fair market value in cash today for your installed equipment. While our primary needs are for additional 145’s, 158’s, 165’s and 168’s, we have a continuing interest in all 7000 series and 360 systems and peripherals. We will buy your equipment for delivery to us immediately or for delivery at a future date. If for future delivery we can buy it now and lease it back to you until your replacement system is installed. This program removes all financial uncertainties associated with a major equipment change and allows you to plan your financial needs at a much earlier date.

NEW...

Cancelling or deferring an on-order 370? It may be profitable for you to discuss your plan with CIS as we can exchange scheduled delivery dates with you — or purchase your date for use in our sales or leasing programs. Exchanging dates offers planning advantages to you that may not be available from the manufacturer. When planning a 370 equipment decision it pays to discuss your plans with experienced 370 people at CIS - We have a proven record of providing unique opportunities to data processing and financial managers.

CALL COLLECT 315-474-5776
RICHARD J. CAMPBELL
OR FRED P. CHOLETTE
Datran Digital Network to Innovate For Data Users

VIENNA, Va. - When the Datran specialized carrier network goes into full operation it will also implement some innovative features designed for data users.

Some of these features were described in a recent speech by Glenn Penisten, president of the company. "The all-digital microwave system can satisfy the requirements of the data user in 1/10 of the frequency allocations required in analog microwave systems," he said. Datran has also developed its own time division multiplexing system along with a solid state digital nonblocking time division switch, he said.

The time division switch took more than three years and more than $5 million to develop, but a full prototype is now working, he noted. Previously, there simply was no available system or hardware.

Each solid state switch is designed to provide switch services to more than 10,000 customers and will handle up to 80,000 nonblocking calls per hour within a few hundred milliseconds, permitting the economies of billing time as small as six seconds.

Network Control

Datran has also pioneered the first computer controlled centralized network control system to be found in any commercial communications network, Penisten said. A key feature of this innovation is a fault alarm and control system that permits computer polling of each unmanned repeater site from the central control every five seconds. In the Houston to St. Louis segment, for example, more than 6,798 alarm points can be monitored from headquarters every 1/12 of a minute. This, with other features, will assure availability of the service and has obviously been designed with the user in mind, Penisten said.

And to round out the technological picture, the entire system is designed with redundancy in its all solid state electronic components — with triple redundancy in the critical components.

The construction and operation of the system are also evidence of the demands unique to specialization. With the exception of space mission programs, no large scale effort other than Datran's has required such a systems approach to application of new technology, he said.

Datran is providing users heretofore unavailable choices which within there exists considerable latitude for the customization of the service to fit their specialized needs. This would seem an appropriate test for any regulator to use in determining if a carrier's real concern is with the user public, he said.

Datran’s president said, "The all-digital microwave systems," he said. Datran has frequency allocations required in analog systems. Some of these features were described in a recent speech by Glenn Penisten, president of the company. "The all-digital microwave systems," he said. Datran has frequency allocations required in analog communications network goes into full operation it will also implement some innovative features designed for data users.

Datran Digital Network to Innovate For Data Users

The described flexibility is essential where no two users have communications requirements that are quite the same. Herein lies a dramatic distinction from the telephone business. Further, in marketing this specialization to meet data communications requirements, Datran accepts end-to-end responsibility for all of the transmission components of the user's telecommunications system, Penisten added.

Datran is providing users heretofore unavailable choices which within there exists considerable latitude for the customization of the service to fit their specialized needs. This would seem an appropriate test for any regulator to use in determining if a carrier's real concern is with the user public, he said.

Specialization responsibilities carry over into the tariff for a specialized service, he noted. Datran has recently tariffed a data transmission service that is performance guaranteed on a money-back basis if it does not achieve, on the average, 99.95% error-free transmission intervals of one second. That level of performance is required by data control of all components of the network so they are to maximize the productivity of their transmission facilities.

By comparison, AT&T's proposed competitive analog-derived DDS service suggests an objective of 99.99% error-free transmission, he stated. Datran is not only guaranteeing performance nearly 10 times better than that, but experience on the Houston to Dallas portion of the network is indicating performance at a level substantially greater than that guaranteed to the customer. This kind of communications performance will remove the burden that low data quality, high cost voice-grade circuits have placed on the efficient and productive use of data processing capital investments, Penisten said.

Datran Digital Network to Innovate For Data Users

For once in your life...

A sleek graceful sailing vessel glides across the sometimes green, sometimes blue Caribbean. The cargo: you. And an intimate group of lively, fun-loving shipmates.

Uniform of the day: Shorts and tee shirts. Or your bikini if you want. And bare feet.

Mission: A leisurely cruise to remote islands with names like Martinique, Grenada, Antigua -- these are the ones you've heard of. Before the cruise ends, you'll know the names of many more. You'll know intimately the enchanting different mood of each... and its own beauty and charm.

Life aboard your big sailing yacht is informal. Relaxed. Romantic.

There's good food. And 'grog'. And a few pleasant comforts... but any resemblance to a plush pretentious resort hotel is accidental.

Spend 10 days exploring paradise.

Spend ten nights watching the moon rise and getting to know interesting people. It could be the most meaningful experience of your life...and it's easily the best vacation you've had.

A cruise is forming now. Your share from $245. Write Cap'n Mike for your free adventure booklet in full color.

Come on and live.

Windjammer Cruises.

P.O. Box 120, Dept. 404, Miami Beach, Fla. 33139

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P.O. Box 120, Dept. 404, Miami Beach, Fla. 33139
The Century 300 system maintains a record of 850,000 Uniform Commercial Code financing statements and plus some 325,000 certification of incorporations records.

Financial Paperwork Problem
Eased by Texas’ Century 300

AUSTIN, Texas — Although the Uniform Commercial Code (UCC) simplifies interstate legal and financial dealings, state and local governments have found that large numbers of listings often have a recordkeeping headache.

To overcome the problem, the State of Texas uses a two-part on-line data system to handle over 1,000 inquiries daily related to its commercial and corporate records.

The Texas file, in fact, contains some 850,000 UCC financing statements and involves the addition of 100,000 new filings each year.

Installed in 1972, the UCC system has greatly improved the state’s service to lawyers and financial institutions which generate over 100 telephone inquiries seeking information from the file every day. In addition, each day’s mail brings 700 to 1,200 more inquiries, new financing statements, change statements and other information requiring file access.

These transactions are handled by six clerks who use NCR 795 CRT terminals to search a disk file containing synopses of the 850,000 financing statements.

If a lender calls to ask about financing statements involving a certain would-be borrower, for instance, the clerk retrieving the call immediately enters the borrower’s name into the terminal. Once a file hit occurs, the new financing statements involving that borrower are displayed on the screen.

The clerk reads the pertinent data to the inquirer. To get a hard-copy report, the operator can depress a key requesting the computer to print the statements desired.

In addition, the computer — an NCR Century 300 with 375K core memory — automatically prints the bill ($5 for each inquiry), ready for mailing in a window envelope along with reports requested.

Financing statement synopses, each averaging approximately 250 characters, are loaded on two NCR 657 90Mbyte disk drives.

Weighing Routine

The index system, basically a modified version of the "Alphabets" system developed for California’s UCC batch file, includes a weighing routine by which the computer picks out and lists "sound alike" names in the event a direct hit cannot be confirmed.

New financing statements are added to the file by use of the CRT terminals. Terminating statement data is also entered via the terminals to delete 30,000 statements yearly.

“The major justification for installing the computer is the file integrity it maintains,” said Mark W. White Jr., Texas’ secretary of state. “Prior to its installation, he added, ‘we were not as confident in the thoroughness of our file searches. The manual files contained index cards for over 750,000 documents, necessitating the manual checking of a large portion of the file for a single search.

When such variables as human error, the possibility of erroneous spelling, etc., are considered, the thoroughness of a manual search is subject to question,” he noted.

Justification for the computer and peripheral equipment, which costs approximately $25,000/mo, is shared by both the UCC application and a corporation division data retrieval system which became operational in December 1973.

Corporate Data

The corporate file, which occupies some 150M bytes of disk storage, consists of

(Continued on Page 22)

DG Packages Nova 2/10 Systems

SOUTHBORO, Mass. — Data General has packaged five systems based on Nova 2/10 minicomputers for the end user.

• An RTOS system, priced at $19,900 and supported by a Real-Time Operating System includes 32K bytes of memory, real-time clock, power monitor, automatic restart and a Teletype terminal.

• An SOS system, priced at $16,100 and which runs the firm’s Stand-Alone Operating System, includes 32K bytes of memory, a paper tape reader and punch, cabinet and a Teletype terminal.

• A medium-scale RDOS System, which runs the Real-Time Disk Operating System, includes 64K bytes of memory, a 2.4MHz moving head disk, paper tape reader, cabinet and Teletype terminal. It is priced at $27,350.

• A large-scale RDOS system with 64K bytes of memory, a 4.9MHz moving head disk, a 45 in./sec magnetic tape transport, a paper tape reader, a 165 char/sec, 132-column line printer and a dual cabinet is priced at $45,500.

• A dual-processor, shared disk system is priced at $57,100, with a shared 4.9MHz moving head disk. Each processor has 64K bytes of memory and a real time clock, and the system includes a paper tape reader, a dual cabinet, interprocessor bus and two terminals.

Any of Data General’s optional equipment or peripheral devices may be added to any system, according to the firm.

The Nova 2 computers used in the systems have a cycle time of one usec, and can hold up to 10 standard 15-in.-square printed-circuit boards.

The systems are scheduled to start delivery in two months.

Tape Checks Alignment, Speed

LOS ANGELES — A master alignment and speed calibration tape, developed by Wangco, Inc., is designed for checking operating parameters on any IBM- or IBM-compatible magnetic tape transports.

The tape is full width, pre-recorded and compatible with IBM master alignment tapes.

The Wangco tape can calibrate tape heads, speed, due to recording frequencies that are accurate to + 1%.

A full channel signal is provided at a density of 800 bit/in.
We’ve introduced our new family of computer systems: Series 60.

Now meet the head of the family.
As you've probably heard, we've just announced Series 60.
Series 60 includes significant large-system capabilities that make it easier for large, dispersed organizations to tap and use the power of the computer where it's needed.
Series 60 with GCOS software offers new advances in data base technology, information networking, and transaction processing—advances that will play a major role in computer operations for the next decade.

Data base management
The organization, processing, and timely availability of data about your business are obviously your first priority. Everything else—hardware, software, programming languages—is there just to help you get at and use this data.
For many companies, this can best be done with one central information source—available to every part of the organization.
Honeywell's larger Series 60 systems provide a powerful data base management capability that lets you define real-world situations and relationships as they occur. With Series 60, you can assemble larger data bases, share files, and modify existing data bases more readily.

Information networking
With Series 60 we developed new data communications techniques, new ways to distribute information rapidly throughout your company—to and from remote locations such as branch offices, warehouses, and factories. We call this approach "information networking."
First, larger Series 60 systems let multiple processors share a common data base as well as peripheral resources. This means increased flexibility and efficiency in information networking operations.
Second, our DATANET* front-end network processors handle communications without tying up the host central processor. And our DATANET* remote network processor does such chores as remote job entry, remote batch processing, and line concentration to further improve data handling and reduce data transmission costs.
Third, our Network Processing Supervisor (NPS) offers a new level of data communications efficiency and control. NPS software controls all communications workloads, performs message switching and extends the system's ability to remain operative and ensure data integrity. NPS is easy to use (design programming time is dramatically reduced) because of its macroinstructions, and because parameter tables make it simple to add terminals and expand the network.

Transaction processing
Honeywell's Series 60, with GCOS transaction processing, now makes online transaction processing practical for many companies who may have previously considered the complexity and cost of such systems prohibitive.
To simplify the system, only data is entered at the terminal. Terminal users don't enter a program, control cards, or even program control statements. They don't even need to know that computer programs exist. Without any specialized training, personnel can activate—through a single entry—the multiple functions necessary to perform complex business transactions.

The GCOS executive
Series 60 strengths like data base management, information networking and transaction processing are all part of the processing environment made possible by Honeywell's GCOS (General Comprehensive Operating Supervisor). GCOS has been widely recognized as the most advanced operating system in the industry. And we've made it even better for Series 60.
Four models of our Series 60 provide the full range of new GCOS multidimensional capabilities—transaction processing, batch processing, remote access processing, and time sharing—all running on one system. This merging of processing dimensions in concurrent operation lets you tailor the processing mix to individual installation requirements. You can even make changes throughout the processing day. And it's more effective than multiple-system installations.
It's easier to get to than you may think
We've done a number of things to make Series 60 systems easier to install. We have conversion aids, programming tools, debugging aids, new COBOL standards, in-depth systems support, and the convenience of our DATANET** time sharing and remote batch service for pre-installation processing.
As a matter of fact, we hope you'll want to learn a lot more about Honeywell's Series 60 family. Just give our local office a call. Or write Honeywell Information Systems (MS 061), 200 Smith Street, Waltham, Massachusetts 02154.

The Other Computer Company:
Honeywell

*Honeywell Trademark
Century System Simplifies State Financial Records

(Continued from Page 19)
data from certificates of incorporation for some 450,000 Texas corporations.
The data includes corporate name, name and address of registered agents and offices of the corporation, names of incorporators, capitalization, etc.

This computer-managed file services 12 CRT terminals in the Corporation Division where clerks receive an average of 550 telephone and 100 written inquiries daily.
The same terminals are used to establish records for 1,300 to 1,500 new businesses that file for certificates of incorporation each month. Typical inquiries ask for file searches to determine name availability for new corporations, to determine whether a proposed name already exists or whether one similar to it is already on record.

NCR was contracted to develop a complete new alphanumeric access system for this file and, said Owen Coon, director of the Computer Services Division, "they've come up with something far superior in the way of an index to a large on-line alphanumeric file. We expect to convert our UCC index to the new approach by September 1974."

Essentially, the new system is based on a simple retrieval algorithm involving a practical method of reducing every word to its phonetic equivalent. Each corporate name in the file has a number (original charter number) and a cross-index leads the computer from phonetic equivalent words to the actual name.
The system is so constructed that a clerk may first ask for a direct hit on a corporate name. Failing this, the computer displays up to 20 names nearest it in terms of phonetic sounds.
"In fact, extensive timings indicate search and retrieval of the phonetic index and response to the CRT takes an average of only 26 seconds using the new system," Coon said, "and our goal is to achieve an average access time of 15 seconds."

Both UCC and corporate records are challenging problems in most states. "Generally," Coon said, "the bigger the file, the bigger the problem and the greater the chance for error when manual systems are used. At least eight or 10 states have files large enough to justify a system similar to ours."

"Had we not installed our system when we did, we would be in real trouble in Texas. We would have needed more clerks, working less efficiently, with more motorized files for which we had no space."

Moreover, Texas has found automated service in these areas will more than pay for itself in revenues generated. When Texas installed the UCC system, it was projected that the secretary of state's office would take in $485,000 in the first two years in service charges assessed for answering inquiries and filing new financing statements and amendments—just about enough to cover the cost of the computer system. It turned out that requests for service far outpaced projections and service revenues brought in $1.2 million in the first year.

Semiconductor Compatible With Many Fixed-Head Disks

SUNNYVALE, Calif. — Intel's IN-63 semiconductor memory system is plug compatible with several types of small fixed-head disk memories. Full memory capacity is 90 "data tracks" with 5,120 serial bits in each track.
The IN-63 can be adapted to replace additional types of small fixed-head disks with a special wire wrap interface card. This card can be adapted to meet the specific addressing, data, clocking and other requirements of the small fixed-head disk it is replacing, Intel said.
The system is priced at "less than one cent/bit," the company said. Enhanced maintenance and reliability are possible because maintenance consists of simple card substitution and because of the inherently greater reliability of semiconductor devices, the firm added.
The system is contained in a standard 19-in. rack-mounted enclosure 7 in. high and has its own cooling. It contains a power supply that operates on standard line current, and also provides batteries for standby power.

When less than full capacity is desired, the system can be decreased in increments of 45K serial bits.
The firm is at 1302 N. Mathilda Ave., 94086.

16-Bit Ruggedized Added

CUPERTINO, Calif. — The 16-bit word 1603 Ruggedized minicomputer from Rolm Corp. meets military environmental specifications to provide users with a heavy-duty minicomputer.
The 1603 is conductively cooled and includes a four-card CPU, 8K of memory expandable to 32K and a 47-440 Hz power supply. Core memory is available in 8K increments, and up to two semiconductor memory modules can be installed in the chassis. Memory in the 1603 provides minicomputer cycle time of 1.2 nsec.

Direct memory access is standard. The optional one-card extended arithmetic unit provides 7.7 sec. hardware multiply/divide.
The 1603 uses the standard Rolm instruction set and is compatible with the Rolm 1601 and Data General Nova computers.

Included in the $9,950 price are individual software manuals, a week of software training and a week of hardware training.
The firm is at 18922 Forge Drive, 95014.

Tape Unit Reads 300 Char./Sec

KENT, Wash. — The R-2000 photoelectric tape reader from Tally Corp. offers bidirectional reading speeds to 300 char./sec continuously, and up to 200 char./sec asynchronously.
Using a deep socket reading technique, the R-2000 reads tapes with up to 60% transmissivity, Tally said. This technique allows read head exposure to ambient light with no effect on reading reliability, and permits complete visibility of the last character read, the firm added. It reads 5-, 7- and 8-level tapes interchangeably.

Reliability tests indicate not more than one read error in every 10 million characters read, according to the firm.

Options include proportional servo reeling with take-up on 7-1/2 in. Lexan reels, fasten-on tape handling and typesetter configurations.

Prices in single quantity start at $546. Tally is at 8301 S. 180th St., 98031.

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**CI Notes**

**Honeywell Restructures**

MINNEAPOLIS, Minn. — Honeywell, Inc. has restructured its top management by bringing together Stephen F. Keating, president, and vice-presidents Edwin W. Spencer and C.W. Spangle into the newly created Office of the Chief Executive.

The new format "will insure maximum broad corporate input to all operating and policy decisions," Keating said.

Spencer and Spangle will retain their primary responsibilities for operating the Control Systems Division and Information Systems Division respectively.

The change will entail the move of the Information Systems Division from Boston to Minneapolis. However, Boston will continue to be the headquarters for the North American operations of information systems.

**Digital Receives Memory Patent**

MAYNARD, Mass. — Digital Equipment Corp. (DEC) has been granted a U.S. patent covering the memory access operation of its Decsystem-10 series of computers incorporating the K110 processor.

The patent names three DEC employees as co-inventors: Alan Kotok, Allan R. Kent and David A. Gross.

**Firm to Study U.S. Procurements**

WATHERSON, D.C. — Decision and Design, Inc. has been awarded a consulting contract by the U.S. General Services Administration, for a government-wide study of policies pertaining to the acquisition and management of automated data processing systems.

The study will consider criteria for government reliance on private industry, economic factors in making lease or purchase decisions and the measurement of centralization or decentralization of government DP resources.

**Supershorts**

Tyecom Systems Corp. has appointed Advanced Techniques as its sales representative for OEM products for Arizona, Nevada, California, Washington and Oregon.

California Computer Products plans to double the size of its national OEM sales force.

Some 1,450 employees of Hewlett-Packard's Data Systems Division received $718,105 under the company's cash profit-sharing plan.

Granvia, Inc. has been recently formed in the fields of computer architecture, microprogramming and computer logic.

**Japan's Production Seen Rising**

TOKYO — Japan's rate of production of computers and related equipment in 1974 should rebound to nearly 20%, according to a forecast in EDP Japan Report.

The 20% is in contrast to the 12.3% level recorded in 1973, which approached the 11.6% level in the "depression year of 1971," the newsletter noted.

The report contains figures from the Electronic Industries Association of Japan (EIAJ), which predicted the 1974 output of computers and related equipment will reach about $2 billion, up nearly 25% over the 1973 level of $1.6 billion.

In 1972, production stood at $1.4 bil- lion, according to EIAJ figures.

Orders for computers rebounded quick- ly after a slump in the second quarter of 1973, and there has been no change in the upturn since the beginning of the year, EIAJ said, adding it expects the computer industry to progress regardless of whether a recession occurs.

While in 1973 production was only up around 10% in terms of value of equipment, the increase was close to 30% to 35% when measured in quantity, figures from EIAJ show.

The number of mainframes jumped from 4,500 in 1972 to 7,466 in 1973, of which 4,004 were for general use, excluding control, and 496 for control.

The value of mainframe shipments in- creased from $652.2 million in 1972 to $730.8 million in 1973, the report said.

Accessory equipment, external memory and I/O devices all showed large jumps in the numbers of units shipped.

The quantity of external memories more than tripled from 11,029, or a value of $278 million, to 34,914 or $338.3 million, while I/O devices proliferated in number from 13,338 to 52,993. How- ever, the value of I/O shipments declined from $280.5 million in 1972 to $266.7 million in 1973, the report said.

Accessory equipment, which jumped in quantity from 32,445 units to 103,507 in 1973, showed an increase in value from $647.3 million to $724.6 million, again reflecting declining prices.

The EIAJ figures include production of foreign affiliated firms, such as IBM Japan and Oku Unisys.
ONE WAY OF COPING
WITH YOUR IBM 1130:
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Face it. The 1130 has been discontinued. That may not bug you now, but sooner or later you’re going to be up a creek. And the only solution IBM can offer is moving you up to a bigger, more expensive computer with all new software to write.

General Automation has a solution that’s simpler. The DMS. Even if you think you’re happy with your 1130 now, we can replace it with our basic DMS at a monthly cost savings of about 40%.

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We believe a system that can do all this for you is a much prettier sight than what you’re looking at now.

☐ I want to know more about the DMS and why it’s the number one replacement for the IBM 1130.
☐ Forget it. I still want to keep my head in the sand.

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Mail to General Automation, 1055 South East Street, Anaheim, California 92805. Or call us at (714) 778-4800.

DMS SYSTEMS BY GENERAL AUTOMATION
NEW YORK—Annual sales of point-of-sale (POS) equipment can be expected to exceed $1 billion by 1979, with some $10 billion worth of POS systems being sold over the next 10 years, according to a market re-
port by Frost & Sullivan, Inc.

Though the forecast of the electronic POS development has been on the general retail department store, the trend has begun to spread to super-
markets, restaurants, service stations, hotels, entertainment loca-
tions and wherever credit cards are accepted, the report stated.

The U.S. Government, in particular the PICO and commis-
sion and the Postal Service, has also become a large potential
user, the study showed.

Over the 10 years, some $700 million in computer revenues
will be attributed to the upgrad-
ing of computer installations to meet the needs of electronic
POS and credit terminal systems, the study continued.

Specifically, Frost & Sullivan forecast sales of 69,000 units
or $254 million in 1974 along
with 85,000 credit card terminals
or $97.5 million by 1977.

By 1977, POS sales will have risen
$325.2 million and credit

card terminals to $97.5 mil-
mion, the report predicted.

POS software prices will rise
from $800,000 in 1974 to $4
million in 1980 when POS hard-
ware sales will have reached

$803 million and credit card ter-

minals $124 million.

'Virgin Markets'
The "real virgin territory," ac-
cording to the study, consists of
the supermarket sector where
sales are projected to reach
20,000 terminals or $200 mil-
lion annually by 1976.

Through the first three years of pre-
dicated, the annual volume
will be at $340 million and surpass the sales of POS to

the general retail department
to.

The concept of combining su-

permarket and department store
operations, while a fairly new
idea in the U.S., has caught on in
Europe and will have a signifi-
cant impact on POS systems, the
report predicted.

Software development has lagged behind hardware, the re-
port said. "More software de-
velopment is now being accom-
plished by the retailer, and no
software company has sought to
market a merchandise control
package in the near future.

"Although there is room for many companies," the report
concluded, "it becomes obvious that a few companies will domi-
nate the market. IBM, TRW and Addressograph Multigraph in their particular areas of expertise."
When our customers install Incoterm terminals, we install Incoterm people.

The PBW Stock Exchange, like most Incoterm customers, has a sophisticated terminal system — the first ever to use intelligent terminals to automate floor trading, quotations, order handling, reporting and clearing of stock trades.

It is the kind of system that requires sophisticated customer service. Service that is readily available. Service that can solve software problems, hardware problems, line problems, computer interfacing problems, printer problems.

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By Marvin Smallhauser
CW West Coast Bureau
LOS ANGELES—After a fi-
nancial crisis that put it down
and almost out, Computer Com-
munications, Inc. (CCI) has
gotten back on its feet and
seems about to put some punch
in its marketing as well as its
profit figures.

The financial crisis last summer
led the company into Chapter
XI Bankruptcy Act proceedings
and into a couple of aborted
mergers.

Now, however, management is
reporting a profitable nine
months and expects the first
profitable year in the eight-year
history of the company.

President Raymond E. High
did the company expects to
have sales of $5 million for its
fiscal year ending June 30 and
net income of about $600,000.
Third-quarter results showed
the third consecutive profitable
quarter. Nine-month totals were
$3.6 million in revenues and
$416,622 in earnings.

High said the company is now
playing it close to the vest but
feels the picture is continuing
to brighten as the company
strengthens its position in the
market for front-end processors
and message switching systems.

High feels the products CCI has
for the market are “still far
ahead of their time” and what
could really help CCI is to capitalize on
them.

“Blessed” Market

The main emphasis, he said, is
in front-end processing systems,
a market which he feels has
started to move since IBM
“blessed” it with the introduc-
tion of its 3704 and 3705.

The market for the systems
consists of 30,000 IBM 360s and
370s installed in the U.S. Dr.
Ervin K. Dorff, senior vice-presi-
dent of CCI, said 43% of those
machines have teleprocessing
abilities so there are about 24% have
a significant network.

“If we can get half of the mar-
et, it will mean 350 systems
costing from $100,000 to
$500,000.”

CCI has a customer base that
includes airline companies,
petroleum companies, law en-
f orcement agencies and securi-
ties firms.

The systems are built modu-
larly and, according to Dorff,
“every installation we have has
expanded its network just about
twofold with our equipment.”

The front-end processor and
message switching systems are
the result of four years of devel-
opment, which included design
of a special minicomputer and
fixed-head disk unit.

The systems have their own
memory and CCI is intro-
ducing semiconductor memory.

Dorff said the cost to CCI of
producing this own design was
“even” with buying it OEM,
“except with the benefit of our
own design give us the manufac-
turing characteristics we want.”

Credibility Gap

High said the main hurdle for
CCI now is establishing the
credibility of its financial state.

“We have to take a conserva-
tive approach to expansion.
We’re not going to jeopardize
profitability,” he said.

He attributed the ability of the
company to bounce back from
near disaster conditions last July
to the dedication of the em-
ployees.

Last July, in the face of a large
loss and the failure of two ef-
forts to obtain public funding,
the staff was cut from 149 to
78.

Those remaining were told:
“CCl can’t guarantee a payroll
but if you report to work every
day and we do make it, we’ll see
that you are paid for every hour
you put in,” High said.

For weekly CCI didn’t issue
a payroll and the 78 em-
ployees asked to stay 75 re-
mained on the job, many even
though they had other job of-
fers, High said.

In the latter part of August,
CCl was discharged from the
bankruptcy proceedings and its
profitability continues.

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June 19, 1974

Prior Warning
Can Mitigate
Blackout Harm

LOS ANGELES — Harmful effects of rolling blackouts on computer firms can be mitigated if sufficient advance warning is given to high technology firms, according to a survey by the Western Electronics Manufacturers Association.

The California Public Utilities Commission is considering three forms of energy saving measures: rolling sequential blackouts, cutbacks to 10 percent below 1972 levels or cuts to 10 percent under 1973 consumption.

With no advance notice of a rolling blackout, the 155 manufacturers surveyed indicated each blackout would cost between 52.4 and 53.5 million in equipment damage and an estimated 32.6 million of lost work in process.

However, if firms received at least three hours notice, losses would be reduced to 51.5 million in equipment damage and 32.1 million of work in process for each blackout.

With 24 hour advance notice, most firms indicated these losses could be reduced considerably or possibly eliminated.

Cutbacks to 10 percent below 1972 energy consumption could result in layoffs of 12.4 percent of present employment, or about 62,000 workers, the survey showed.

However, if cutbacks were based on 10 percent of the 1973 rate, employment would be reduced by 4.5 percent or by 22,500 jobs, the survey noted.

Northern New Jersey Service Bureau, with 360-30 billing approximately 600,000 break even interested in merger with similar company for economies in hardware, etc.

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As a member of a newly formed group at Digital, you'11 have a ground floor opportunity in the development
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with individual responsibilities, you'll have a chance
to play an important role in the group's development
as well as your own.

A familiarity with digital logic design, PDP-10 pro-
gramming and interactive graphics is highly desir-
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Excellent opportunities exist at all levels of experi-
ence for talented individuals with demonstrated pro-
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ware/hardware gap.

Please direct your resume to Jerry Patton, Digital Equipment Corporation, Dept. 619, 162 Main Street,
Maynard, Mass. 01754.

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Aided Design
Software/Hardware
Engineers

If you have a solid software development back-
ground in interactive systems, and you'd enjoy as-
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Stone & Webster, an established leader in power generation is seeking computer software professionals for its growing Computer Division. A wide range of applications currently under way include both in-depth engineering analysis and management information systems. If qualified you will join a competent group of professionals using our IBM 370/165/158 (OS/VMV) computer complex together with FORTRAN, WATFIV, IMS or MARK IV very helpful. Some of these positions may involve occasional domestic and overseas travel. For immediate consideration send resume and salary history to:

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INTEGRALS

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  Minimum requirements are:
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Please send resume, including salary history and confidence, to Mr. McKinley Littlejohn.

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Page 31
Assistant EDP Manager

Large progressive credit card center needs an energetic individual to assist the EDP Manager. Requires indepth EDP experience, preferably on line systems under OS/360 with a lesser emphasis on management experience. The position will require an active person to coordinate the requirements of the users and the capabilities of the EDP installation.

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**ALL 360 SYSTEMS**

<table>
<thead>
<tr>
<th>CPU Model</th>
<th>Processor</th>
<th>Memory</th>
<th>I/O Set</th>
<th>Price</th>
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</thead>
<tbody>
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<td>360/30</td>
<td>IBM 360</td>
<td>360K</td>
<td>360/1200</td>
<td>1401</td>
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<td>360K</td>
<td>360/1200</td>
<td>360/25</td>
</tr>
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</table>

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86K, 9 2336 Tape, 4

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**Dataprocess Triangles: Year-End Earnings**

WOODLAND HILLS, Calif. — Earnings more than tripled on a 28% rise in revenues in the year-ended March 30 for Data-Products Corp., supplier of line printers and core memories to the minicomputer and terminal markets.

"Based on our expanding back-logging of orders, we anticipate an increase in bookings and revenues of approximately 25% in the next six months," said President Graham Tyson.

Line printers accounted for 50% of the firm's revenues, which reached $76.3 million compared with $59.8 million a year earlier.

Earnings totaled $7.4 million or $1.09 a share compared with $2.3 million or 34 cents a share in the same 1973 period.

Income before tax credits also tripled, to $4.7 million or 70 cents a share compared with $1.5 million or 22 cents a share in the same period a year ago.

Sycor Ups 1st-Quarter Figures

ANN ARBOR, Mich. — Sycon, Inc. boosted its first-quarter results from those of the year-ago period with earnings of $853,000 or 31 cents a share.

In the restated 1973 period, the firm showed an income of $772,100 before a charge of $2.1 million from a change in accounting for the operating method, which resulted in a loss of $1.3 million or 44 cents a share.

Revenues climbed to $9.2 mil- lion from $6 million in the year-ago period.

The first-quarter results reflect the firm's strategy to "strength- en its position in the market for remote communications de- vices," observed President Samuel N. Irwin.

In future Mind

"While our revenue base has grown substantially over recent periods, we have been applying the company's resources to build for the future. For example, our direct marketing force is nearly twice as large as a year ago, and our product range has been broadened . . . ," he said.

Sycor is now in the start-up stage of manufacturing for flexible disk and matrix printer, he added.

**Conversion Costs Hurt Keydata Net**

WATERTOWN, Mass. — Third- quarter earnings failed to keep pace with the 24% rise in reve- nues at Keydata Corp., due to costs of conversion to faster ter- minals for customers and es- tablishment of a new customer ser- vice center, the firm said.

Revenues rose to $3 million from $2.4 million in the year- ago quarter ended April 30, while earnings fell, to $178,000 or 6 cents a share from $227,000 or 8 cents a share in the year-ago period.

Income from operations before terminal conversion costs was $302,000 compared with $259,000 a year ago.

President John T. Gilmore Jr. said the firm believes the "con- version and the gains provided in the income the previous year.

The backlog of firm orders rose to $42.3 million, up 24% from several long-term contracts which approxi- mately equal the value of the reported backlog, the firm said.

Dataprocess products to re- duce its debt by $7.6 million, leaving a total of $40.7 million. Two thirds of this is in long-term debt, plus an additional 5.4% interest, and only one fourth is tied to prime interest rate, the firm said.

**Modcomp Reports Record Earnings; SEL Boosts Third-Quarter Results**

FORT LAUDERDALE, Fla. — Two minimakers based here, Modular Computer Systems (Modcomp) and Systems Engr- neering Laboratories, Inc. (SEL), reported mixed results for the quarter ended March 29.

Modcomp started off its fiscal year with record sales and earn- ings in the first quarter.

Revenues rose to nearly $5 mil- lion from $2.2 million in the year-ago period.

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### Earnings Reports

**Electronic Data Systems**

Three Months Ended

<table>
<thead>
<tr>
<th>1974</th>
<th>1973</th>
</tr>
</thead>
<tbody>
<tr>
<td>$24,073,002</td>
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<td>3,090,337</td>
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<tr>
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<td>$3,587,000</td>
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<tr>
<td><em>Earnings</em></td>
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<td>$2,825,000</td>
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<td>$3,587,000</td>
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<td>$0.26</td>
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**National Computer Systems**

Three Months Ended

<table>
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</tr>
<tr>
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<td>778,000</td>
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<tr>
<td>$0.08</td>
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**Computer Equipment**

Three Months Ended

<table>
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**Cybernetics**

Three Months Ended

<table>
<thead>
<tr>
<th>1974</th>
<th>1973</th>
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<tbody>
<tr>
<td>$85,964</td>
<td>97,741</td>
</tr>
<tr>
<td>15,000</td>
<td>15,000</td>
</tr>
<tr>
<td><em>Net Sales</em></td>
<td><em>Net Sales</em></td>
</tr>
<tr>
<td>$90,964</td>
<td>112,741</td>
</tr>
<tr>
<td>15,000</td>
<td>15,000</td>
</tr>
<tr>
<td><em>Net Income</em></td>
<td><em>Net Income</em></td>
</tr>
<tr>
<td>$10,000</td>
<td>8,000</td>
</tr>
<tr>
<td>$0.01</td>
<td>$0.01</td>
</tr>
<tr>
<td><em>Earnings</em></td>
<td><em>Earnings</em></td>
</tr>
<tr>
<td>$10,000</td>
<td>8,000</td>
</tr>
<tr>
<td>$0.01</td>
<td>$0.01</td>
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</tbody>
</table>

### Computerworld Stock Trading Indexes

<table>
<thead>
<tr>
<th>Index</th>
<th>Value</th>
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<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Composite</td>
<td>100</td>
<td>Composite</td>
<td>100</td>
</tr>
<tr>
<td>Special</td>
<td>100</td>
<td>Special</td>
<td>100</td>
</tr>
<tr>
<td>S/R</td>
<td>100</td>
<td>S/R</td>
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<tr>
<td>S/R</td>
<td>100</td>
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</table>

### Computerworld Stock Trading Summary

<table>
<thead>
<tr>
<th>Stock</th>
<th>Price</th>
<th>Price</th>
<th>Change</th>
<th>Change</th>
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</thead>
<tbody>
<tr>
<td>$2.22</td>
<td>$2.13</td>
<td>$0.09</td>
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<tr>
<td>$64,671,000</td>
<td>$8,629,000</td>
<td>$56,062,000</td>
<td>$7,840,000</td>
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<tr>
<td>$5,390,000</td>
<td>$3,900,000</td>
<td>$1,500,000</td>
<td>$1,500,000</td>
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</tr>
<tr>
<td>$80,480</td>
<td>$2,490,000</td>
<td>$51,500</td>
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<tr>
<td>$470,300</td>
<td>$272,500</td>
<td>$197,800</td>
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</tr>
<tr>
<td>$6,620,000</td>
<td>$4,940,000</td>
<td>$1,680,000</td>
<td>$1,680,000</td>
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</tr>
<tr>
<td>$224,429</td>
<td>$63,015</td>
<td>$161,414</td>
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</tr>
<tr>
<td>$472,516</td>
<td>$176,394</td>
<td>$296,122</td>
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</tr>
<tr>
<td>$11,315,761</td>
<td>$5,997,117</td>
<td>$5,318,644</td>
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<tr>
<td>$88,009</td>
<td>$125,554</td>
<td>$37,545</td>
<td>$37,545</td>
<td></td>
</tr>
</tbody>
</table>

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- B-1700 and B-700

*Only 85%!!!*

Yes, we have both regular and double-density cartridges (type 8970C and type 8970-40) for this tremendous-saving, More-reliable Burroughs specifications.

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CIG has an add-on memory system for every model in the 360 and 370 line including 22, 25, 30, 40, 44, 50, 65, 67 and 75. As a matter of fact, there isn’t a manufacturer around who has more 360 memory than we do. Which means if you have any reason to buy 360 memory, you have every reason to buy it from CIG.

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CIG gives you bigger memory for smaller bucks. Actually, we’ve gotten a reputation in the industry for coming up with the lowest possible price for the best possible quality. Which isn’t a bad reputation to have.

3 PERFORMANCE
With 700 installations and over 10 million operating hours in the field in every kind of application, the performance of CIG 360 memory says more than any ad can say for it.

4 EXPERIENCE
CIG, with its Data Recall product, was the first company in the industry to offer 360 independent memory. We went on from there. Improving on our improvements. Today, CIG is the world’s leading independent memory supplier with sales, service and systems engineering support available throughout the United States, Canada and Europe.

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