**SOCIETY**

**Including System Certification**

**SJCC Awaits Afips Progress Reports**

By Edward J. Bride

ATLANTIC CITY, N.J. — The computer community is taking another pause this week, to examine some practical problems and technical advances of today's data processing world.

Employment and training programs, new hardware and software, the computer's impact on the general public, the state of the computer industry and more effective DP usage are all under examination here Tuesday to Thursday at the Spring Joint Computer Conference (SJCC).

**Progress Reports**

The equipment itself takes the back seat, in favor of progress reports from various corners of the industry, including the sponsoring organization, the American Federation of Information Processing Societies (Afips).

Afips officials are expected to discuss the new system certification program, designed in part to head off government regulation of computer systems which affect the public (CW, April 5).

Afips said it hoped to interview interested individuals during SJCC, with the goal of starting work on the first "Systems Review Manual" for security and privacy.

Keith Uncapher, Afips president, was expected to deliver a major address regarding the current industry status, and next-step marketing possibilities.

His Wednesday morning address was to be on the opening event of the World Trade Day," jointly sponsored by Afips and the U.S. Department of Commerce (DOC).

As part of the World Trade Day luncheon, the DOC will discuss changing world markets, opportunities for U.S. industry, the need for increased exports and information and services available to U.S. organizations to aid in overseas marketing.

Marcus van Genel, new acting director of the DOC's Bureau of International Commerce, will deliver the luncheon address, followed by a three-hour marketing seminar.

An official of DOC said the "contributions of the U.S. computer field in re-establishing a favorable balance of trade" are "critically" important.

While the semianual joint computer conferences remain the showcase for state-of-the-art equipment, the advances have tapered off during the current recession. New products are fewer in number, at this 40th conference, and less dramatic in technical breakthroughs.

(Continued on Page 2)

**13 Models Beef Up Burroughs 700s**

By Frank Pinta

DETROIT — Burroughs nearly doubled the number of medium-scale computers offered to its users last week with the introduction of 13 models in the 700 Series, including its first solid-state memory systems.

Burroughs also announced a new version, MCP-V, of its master control program for the new models as well as all current B4700, B5300 and B2500 models.

A data communications processor for the B4700, B3700 and B2700 models was also introduced.

**80/10 Channels**

The five B4700 models include versions with from one to four CPUs and I/O systems. They include a basic system with 150k to 500k bytes of core memory and eight to 20 I/O channels. Larger models provide additional I/O and two, three and four CPUs. The largest model provides up to 80 I/O channels and up to 2 Mbytes of main memory arranged in independent subsystems.

Cycle time is 250 nsec for the five 4700 models. The I/O subsystem transfers data at up to 4 Mbyte/sec for each processor, twice that of current B4700 models.

The B3700 is available in both single- and dual-processor versions. The B3700 processor is up to 70% more powerful than the current B3500 processor, according to Burroughs.

The single processor B3700 can have from eight to 20 high-speed and line-speed I/O channels and 100k to 300k bytes of main memory. The two-processor model can have up to 40 I/O channels and up to 600k bytes of memory arranged in independent subsystems.

The 3700 introduces Burrough's first solid-state memory with a cycle time of 333 nsec. The I/O subsystem transfers data at up to 3 Mbyte/sec, 50% faster than the B3500.

The six models of the B2700 Series are newer versions of the B2500 and B3500 with better price/performance ratios.

Five of the models are single-processor systems while the sixth is a dual-processor version. Cycle times of the various models are 1.5 usec, 1.0 usec and 500 nsec.

A basic B2700 system has six I/O channels and 300 to 600k bytes of core memory. Larger single-processor systems can have up to 20 I/O channels and up to 300k bytes of main memory. The dual-processor model can include 40 I/O channels and up to 600k bytes of memory arranged in independent subsystems.

Each system transfers data at up to 2 Mbyte/sec.

**Multiple Configurations**

Head/tack disk file subsystems are used to couple the processors in multiple processor configurations, allowing access to a common data base. A file protect memory feature protects data bases from destruction by unauthorized users in the systems.

The Data Communications Processor

(Continued on Page 2)

**Switch Called Illegal**

Bell 'Unplugs' User's MCI Line

By Ronald A. Frank

CHICAGO — A Microwave Communications Inc. (MCI) data user has had his interstate MCI line disconnected by Illinois and Southwestern Bell without prior notice.

The Illinois Telephone Co. said a switch installed by MCI, allowing the user to alternate his Bell modems between MCI's line and a Bell System dial-up line, was a violation of a state tariff, but the issue may have to be decided by AT&T on an interstate level.

MCI, the new specialized carrier providing service between Chicago and St. Louis, installed the switch to give Sweetheart Cup Corp. a dual capability. With the switch in one direction the Bell line was unaffected.

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The Data Communications Processor

(Continued on Page 2)
Progress Reports Expected on Certification

The first, "The computer as supertoy," was scheduled for Tuesday morning. The second, "The computer as instrument," will take place Thursday. The third, "The computer as schoolroom," is planned for Friday morning. The final, "The computer as supertoy," is set for Tuesday afternoon. The panel will be comprised of representatives of Lawrence Livermore Laboratory, PARC and Bell Labs.

New Models Beef Up Burroughs 700 Line, MCP Version Added

(Continued from Page 1)

Although the DCP provides a number of improvements and enhancements over the previously announced 2100 COM unit, it does not completely supplant the latter. One significant difference is that the 2100 COM can be used in a stand-alone configuration, while the DCP must be used as part of a larger network or system. Another major distinction is that the DCP utilizes a 16-bit processor, whereas the 2100 COM uses a 32-bit processor.

The DCP's improved performance is achieved through several key enhancements. One notable improvement is its increased throughput capabilities, which allow it to process data faster and more efficiently than its predecessor. Additionally, the DCP offers enhanced communication features, making it easier to connect with other devices and systems. These advancements make the DCP an attractive option for organizations looking to improve their data processing capabilities and streamline their operations.

Table 1: Statistics on Models of Burroughs 700 Series

<table>
<thead>
<tr>
<th>Model</th>
<th>No. CPUs &amp; IOPs</th>
<th>Memory Range</th>
<th>Cycle Time</th>
<th>Channels (Low Speed/High Speed)</th>
<th>Channels Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>B4700</td>
<td>1</td>
<td>150k - 500k</td>
<td>780 nsec</td>
<td>B7000 (Low/High)</td>
<td>10 (5/5)</td>
<td>20</td>
</tr>
<tr>
<td>B4701</td>
<td>2</td>
<td>300k - 1M</td>
<td>800 nsec</td>
<td>B7000 (Low/High)</td>
<td>18 (10/10)</td>
<td>40</td>
</tr>
<tr>
<td>B4702</td>
<td>3</td>
<td>60k - 1.5M</td>
<td>900 nsec</td>
<td>B7000 (Low/High)</td>
<td>26 (10/10)</td>
<td>60</td>
</tr>
<tr>
<td>B4703</td>
<td>4</td>
<td>50k - 2M</td>
<td>1000 nsec</td>
<td>B7000 (Low/High)</td>
<td>34 (20/20)</td>
<td>80</td>
</tr>
<tr>
<td>B3771</td>
<td>1</td>
<td>100k - 300k</td>
<td>1100 nsec</td>
<td>B7000 (Low/High)</td>
<td>18 (10/10)</td>
<td>40</td>
</tr>
<tr>
<td>B3772</td>
<td>2</td>
<td>120k - 600k</td>
<td>1200 nsec</td>
<td>B7000 (Low/High)</td>
<td>20 (10/10)</td>
<td>40</td>
</tr>
</tbody>
</table>

use of the 2100 COM, make it a valuable addition to any network infrastructure.

The DCP is expected to be widely adopted by organizations in various industries, including finance, healthcare, and government. Its improved performance and features make it a compelling choice for those looking to upgrade their data processing capabilities.

Conclusion

The 2100 COM DCP represents a significant advancement in data processing technology. Its improved performance and enhanced communication features make it an attractive option for organizations seeking to improve their data processing capabilities. With its increased throughput capabilities and communication features, the DCP is well-suited for a wide range of applications, making it a valuable addition to any network infrastructure.
Check-Swinding Ring Submitted Phony Pay Reports to DP Center

By E. Drake Landell Jr.

NEW YORK—A phony report involving the Board of Education's computer system has been uncovered by Brooklyn District Attorney Eugene Gold's staff.

Gold charged that the check-swinding ring submitted fraudulent payroll reports to the computer center claiming hours worked by teachers no longer employed by the district.

The computer system processed the reports in a normal manner without discovering that checks were being issued to non-existent employees, Gold said, apparently because the system was not programmed to make note of former employees.

John K. Herrick, employed by the Board of Education, has been arrested and charged with grand larceny in the second degree; conspiracy to possess a forged instrument; and criminal possession of stolen property, all felonies.

He faces a possible maximum prison term of 21 years and is currently free on personal recognizance until a May 25 hearing, according to the district attorney's office.

The swindle defrauded city, state and federal education programs of $40,000 during a four-month period, Gold said.

Officials from the Board of Education's Bureau of Audit and Finance became aware of the swindle after the board's payroll computer rejected a card because the name on it was misspelled.

On investigation, it was discovered that the teacher named was no longer with the Board of Education, Gold said.

Further investigation disclosed that at least five other teachers no longer working for the city were named on checks, Gold said. The addresses given for the names turned out to be the addresses of answering services, he said.

Gold gave this account of how the scheme worked:

The city, state and federal programs were at various locations throughout the city. Each location submitted its payroll reports to the computer system.

Someone would insert the extra payroll reports and retrieve them after they had been processed by the computer system.

The checks were then mailed to the answering services which in turn sent them to a post office box number in Long Island.

The checks were then traced to various banks by police, where new accounts had been opened with the checks. Most banking was done by mail.

The programs under which the phony checks were drawn included state-funded Parent Education and Welfare programs and the city-funded Apprentice Teachers program, the Per Diem Sub-

...And File Juggling Defrauds State

By a CW Staff Writer

LEXINGTON, Ky. — Manipulation of billing files helped two men here defraud the state of more than $61,800, according to a court action filed here recently.

The two men, Donald Burcham, manager of National Credits Inc., and James Robinson, assistant administrator of the University of Kentucky Medical Center, have been arrested and charged with defrauding the state, and released on $25,000 bond each pending hearings in the case.

Bill payments to the Medical Center were collected from various insurance companies and deposited in dummy accounts in several banks during the past 10 months, sources said.

At the same time, they added, the accounts were cancelled in the Medical Center's computer system by either being marked "uncollectable" or by being removed from the computer's files.

The Commonwealth's attorney refused to give any details in the case or discuss the role played by the two arrested men.

The fraud was uncovered, he said, however, when one account was not removed from the files and an insurance company received a second bill.

The company told the center that the bill had been paid and delivered the cancelled check as evidence, he said.

The hospital had no record of the payment, he said, and an investigation revealed the dummy accounts and the payments — the largest for $8,000.

The investigation is continuing and there may be further arrests, Gold said.

Ampex Double Density Disk

No DOS or OS software changes.

Ampex Double Density Disk Systems are a real computer room space saver for IBM 360/30, 40 and 50 users—233 megabytes in half the space, 466 megabytes in the same space as 2314 systems.

Lower location taxes—33 megabytes on four drives, 466 on eight. Average access of 32 milliseconds, working with standard 2316 disk packs. Today's most cost-effective technique for adding storage capacity.

No software changes under DOS or OS, with multiple second and seek overlap accommodated within the drives themselves.

And, with Ampex modularity, you can use a combination of single and double density packs, add more capacity as the need arises.

Ampex worldwide service is an extra plus. For all the information on superior double density disk drives, plus data on core memories and tape drives, call your Ampex computer specialist. Or write.

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Page 3
**Navy DP Seminar Told**

**'Desperate' Need Seen for Good Measurement Tools**

By Edward J. Bride
Of the CWS Staff

QUONSET POINT, R.I. — Hardware and software measurement tools are an absolute necessity in managing a computer installation. Without them, "you can proceed, but you can't manage."

Variations on this theme were expressed by nearly every speaker at a DP seminar, sponsored by a multi-installation Navy data processing advisory group here.


sponsored by a multi-installation Navy by nearly every speaker at a DP seminar, in computer culture" as in other

"cultures."


Keypunching is one area in which the Navy has been able to set some measurement guides, and incentives, he noted. But in operations "we could do better."

In the near term, there will be a "desperate" need for good measurement tools in computer operations, particularly in multiprogramming environments, Ruth noted.

Some form of measurement can be applied to applications programming, Ruth continued, suggesting the types of programs, instructions per hour, assemblers or compilers per program, error rates and maintenance as possible criteria.

**Third-Generation Problem**

The measurement area is made more complex with third-generation hardware, he continued, because of varying CPU performance, file structures, job scheduling, data management techniques and even language selection.

Simple hardware monitors can alleviate that problem, he added. But even with these devices, what the manager learns is "how much of the system is burned up in system software," Ruth said.

"Not that much computing goes on in business data processing," he said. Most of the work is more aptly termed "data manipulation," and the manager needs to know when certain routines are not being used (so as to make the processor more available for computing).

As budget crunches become even greater, measurement will become more important, he suggested. Ruth is required to cost-justify his measurement device every three months, he added, "to make sure it's paying for itself." His CPA 3300 (now marketed by Compress) has been used to measure the performance of IBM, Burroughs, RCA and Univac computers, he noted.

Lunchtime speaker Dick Brandon reiterated that users do not know how to measure "the performance of people or of an installation."

Using systems analysts as an example, Brandon suggested that between a competent and an incompetent analyst is great, "but the salary difference is almost nil."

Brandon, president of Brandon Applied Systems Inc., and a programmer by trade, said "I could go to work at any DP installation for 18 months, do nothing and you'd still know me."

Better Standards

He called for better standards ("in 1972 I shouldn't be saying this"), better public relations to attract more qualified people to the industry ("if there were only one society, that might work, but we have ten, all working against each other") and better performance measurement "to reestablish management control."

Columnist and consultant Alan Taylor discussed the hardware-software approaches to monitoring, noting a hardware monitor detects actions at the time of production, and asked "would it not be better to do this during test?" through software.

It appears that users "just have a vague awareness" of systems design, Taylor said, adding that "the scheduling and design of systems are one basic area where control is possible. The others are the data, tests on specific systems and close monitoring of changing situations within a program or a data storage system."

The Navy seminar was attended by about 250 military and civilian DP specialists from the Narragansett Bay area, and was sponsored by the Newport Naval Base DP Advisory Group, which is comprised of users from several Naval activities on both sides of the bay.

Few of the users in the group have third-generation hardware, but many have plans to install such equipment this year, and keynote speaker Rear Admiral Philip Crosby commented that half the Navy's CPUs are 10-years-old.

Criticizes Emulation

Crosby criticized the practice of acquiring third-generation CPUs for emulation, which causes a "considerable loss in raw computing power."

The only way to recover this power is by program conversion, said Crosby, vice-commander of the Naval Supply Systems Command. He also said it is "will defeating" to have one programming group dedicated to both conversion of old programs and implementation of new ones.

When systems are being developed for many users, there should be one central design agency (such as FMOS) to save money, avoid the "not-invented-here syndrome" and have the advantage of dealing with one central agent.

"Dividing these tasks among organizations simply does not work," he said.

With current budget limitations, the Navy is required to show a profit for every piece of DP equipment before it is permitted to sign a contract, Crosby said.

Competing for funds during a "time of disenchchantment with the military," the Navy must quantify that the "return will be greater than the investment," and certify, in advance, that the payoff will be in hard cash, and will not be reflected in reduced appropriations at the time promised, he stated.

**Paroles Get DP Supervision**

HARRISBURG, Pa. — The state Board of Paroles and Pardons plans to computerize supervision of all paroles under its jurisdiction.

The system is expected to speed communications between the board and the police and other law enforcement agencies.
Epoch 4 means never having to say you're sorry.

"I'm sorry, we don't have that data yet."

"I'm sorry, that's being re-run."

"I'm sorry, we've lost that information."

In EDP, "I'm sorry," just doesn't cut much ice. But consider this: Epoch 4 is the tape that's 80 times tougher than the competition. Epoch 4 is the tape that cuts handling damage by 50 per cent. Epoch 4 is the tape with a twenty year warranty. Epoch 4 is the tape that won't let you (or your data) down.

Make a date with your man from Graham Magnetics. Have a heart-to-heart talk about Epoch 4. And never say "I'm sorry," again.
By Molly Upton

NEW YORK — "Foggy data" has delayed approval by the New York City Office of Rent Control of increases to about 75% of the 1.1 million families living in rent-controlled apartments here. Although the computerized system for handling rent increase applications was set up with error-correction procedures, this aspect of the program has proved more difficult than originally anticipated. Instead of perhaps 8,000 buildings, as we had figured, we've sent error correction requests to 43,000 (out of a total of 64,000) buildings," noted Robert Rosenberg, assistant housing administrator.

"Foggy data" came from faulty input by landlords. The forms "asked for a complex series of calculations made by the owners," acknowledged Rosenberg, and sometimes landlords simply filled in spaces incorrectly.

Some spaces on the form allowed landlords to insert a couple of dates, such as 1920-1930, for information on the construction date, rather than clearly calling for one year. The landlord reports undergo extensive processing and checking, taking into account such factors as "senior citizen rent increase exemption" information. The maximum base rate is computed within a 7 1/2% limit.

"When we attempted to compute the maximum base rate, we produced either an MBR or an error correction request to the landlord saying he gave us some wrong information or didn't give it to us the way he was told to give it to us," Rosenberg explained. But the landlord is not the only source of data used in these rent increase calculations.

"In processing the forms, the system picks up all the interim increases the landlord has gotten since 1970, like a history. It validates his old rent, the rent he makes those calculations, and we check them for math accuracy, and also our original records to see that what he put in as his base rent was right. If he's wrong, we correct that on his MBR form," he added.

"The system validates what went on before, makes that adjustment, tells him any interim increases he got after that, what his MBR is, what he can collect this year. It also notifies him whether or not he's eligible for the MBR if he has defaulted under a number of conditions," Rosenberg said.

Rent increases on controlled buildings are granted only to those buildings that are on file as having met safety and health requirements.

"We are most of the way through cleaning up the data problems. A good part has been repunched and is back into the cycle," Rosenberg said.

The system used involves about 150 programs, and was developed in about a year.

Melbourne Studies

On-Line Portfolio Analysis Service Possible

A special to Computerworld

ADELAIDE, South Australia — The Victorian Government is concerned with similar studies and the New South Wales Government is also said to be interested. The proposal calls for a state information center linked to a computer-operated national clearinghouse in Canberra. The data would be collected and disseminated on a virtually limitless range of commercial topics including labor resources, company and operating regulations, cost benefits, business taxation and economic evaluations.

About 90% of the information for the service is already stored in one form or another, but it is haphazard.
BREAKTHROUGH!

ITEL'S unique new Packaged Lease Program may be the most significant announcement since the introduction of the 370.

Now there's a new way to lease an IBM System/370 from ITEL on a short term basis with complete flexibility and surprisingly large savings. The ITEL Packaged Lease Program lets you lease a complete computer package consisting of System/370, ISS Disk Drives, and AMS Monolithic Memory.

Lease terms range from 3 to 8 years, and savings can be as great as 60% of IBM rental!
ITELS Packaged Lease Program may be the most comprehensive leasing program ever offered. Just look at the advantages of this package: All equipment is from a single source, ITEL. You can upgrade from one model of 370 to another during the terms of the lease. You get advanced technology Disk Drives and Monolithic Memory. And you get remarkably flexible lease terms.
ITEL has the unique capabilities required to make such a lease: financial resources and expertise. (ITEL has over $260 million in 360 and 370 leases in effect.) Monolithic Main Memory from Advanced Memory Systems, Inc. And Disk Drives from our Information Storage Systems Division, which have set the industry standards for reliability.

Get all the facts on ITEL'S Packaged Lease Program. CALL THE PRICE/PERFORMANCE PEOPLE AT ITEL.

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Company __________________________________________ Phone ______________________
Address __________________________________________ Phone ______________________
City __________________________ State ________ Zip __________
Present system __________________________________________

Phone: (415) 989-4220
A Special SJCC Announcement:
IBM agrees to maintain 360 CPU’s with selected Fabri-Tek extension core memory attached.

IBM has recently formalized by letter to Fabri-Tek a policy for continuing maintenance of certain 360 CPU’s which have been modified by the addition of Fabri-Tek extension core memories.

IBM has inspected Fabri-Tek’s alterations and additions to a number of 360 system types, and determined that continued IBM CPU maintenance is practical. System types inspected to date are as follows:

- S/360 Model 22 to extend memory capacity to 64K;
- S/360 Model 30 to extend memory capacity to 64K;
- S/360 Model 40 to extend memory capacity to 448K;
- S/360 Model 50 to extend memory capacity to 1 million bytes

IBM will continue to maintain these CPU configurations in the normal manner throughout the United States and in locations outside the U.S. where IBM has an existing service capability. IBM has further confirmed a willingness to inspect any new alterations or attachments to CPU’s not included in the above list, and to add them to approved configurations for service as they qualify.

24-hour service in over 125 cities.

Fabri-Tek 360-compatible memories are maintained by a network of more than 1,000 service representatives in over 125 cities in the U.S. These service representatives are employees of Sorbus, Inc., the contractor for 24-hour field maintenance of Fabri-Tek extension memories since May of 1971.

Fabri-Tek also provides a company field support program for end-user memory maintenance. This support program functions with regional service managers and memory specialists deployed in key locations, and provides direct factory support to the Sorbus organization.

There are presently over 120 installations of Fabri-Tek 360 extension memories in the United States and Canada.

See the complete line of add-on 360 core at booth 1210, SJCC Show—Atlantic City.
Now you have the best reason in history to buy E bonds.

Today's E bonds pay a bonus interest rate of 5½ percent compounded semiannually when held to a maturity of 5 years and 10 months. And they'll continue to earn the 5½ percent bonus rate as long as you hold them.

And if you compare E bonds with other ways of investing your money today, 5½% is a good rate of return.

Moreover, you pay no state or local income tax on the interest you earn on U.S. Savings Bonds. Also, the Federal tax on E bonds may be declared annually or deferred, whichever you prefer. (Depending on your income, deferring payment of Federal taxes on the interest could be an advantage.)

And buying bonds couldn't be easier. Especially when you do it through your company's Payroll Savings Plan. You decide how much you'd like to save, and that amount is deducted from your paycheck automatically. If you have trouble saving money on your own, buying bonds through Payroll Savings is a way of saving—automatically, and systematically.

For your family's future. And for America's future. Because U.S. Savings Bonds provide the money our nation needs to grow.

Buy bonds. Join the Payroll Savings Plan where you work. You'll be taking stock in America's future, and helping your family's savings grow.

Editorial

Giving the Store Away

A criminal's best "accomplice" is the DP staff that listens to all the "scare" stories about embezzlements— and then does nothing to protect its own installation.

In one recent case, the payroll program made no provision for checking the status of employees before issuing checks. As a result, it was easy to get payroll checks issued to employees who were no longer with the school system.

In another recent case, accounts were marked "uncollectable" or removed from the files and the payments deposited in dummy bank accounts.

Both cases present a very strong argument for some sort of system certification program, such as those proposed by the American Federation of Information Processing Societies and the Society of Certified Data Processors. It is appalling that, after all these years, some states still don't contain the absolute minimum of checks and balances.

Letters to the Editor

How Many Firms Recognize Tech, Management Skills?
The article by A.M. O'Reilly, "All Project Team Members Must Be Professional," [CW, April 26], makes the excellent point that a successful project team must be comprised of "a known, proven set of skills."

He goes on to describe the ideal situation where analysts and programmers are well trained and experienced technicians; where users fully understand the ramifications and requirements of new systems; where management understands objectives, tradeoffs and costs; and where project control and documentation are well automated.

How can we argue with O'Reilly? But how many corporations recognize their technical and management skills, let alone take advantage of them? How many have complete, up-to-date job descriptions and skills inventories from which to select a solid project team? How many have well-planned and managed in-house training programs geared to skills requirements and system development needs?

How many have effective project control systems and project management training programs? How many have EDP career paths that are achievable and tied to accomplishment?

Our company, which focuses on EDP manpower development, has found few organizations that can answer these questions affirmatively.

We employ our "Total System for EDP Training and Career Development" to enable clients to define their skills requirements and priorities, develop job descriptions and career paths geared to the organization, and build an in-house training program geared to systems plans and specific needs.

The valuable and costly resource known as EDP personnel must not only be well structured and managed to attain the goals of corporate management, but must also be fully understood, well oiled and constantly maintained to achieve the working level described by O'Reilly.

Lawrence K. Grodman President
Q.E.D. Information Sciences, Inc.
Wellesley Hill, Mass.

Reader Questions Operation Of Detection Equipment

You're putting me on! Page 13 of the April 5 issue mentions a DPMA letter to its membership claiming that detection equipment is equipped to "determine any interception in the earth's field of gravity between them, by any object made of ferrous metal."

Can you please explain how the equipment operates? I believe you owe it to your readers to convince them that this airport probing is indeed harmless.

Roger C. Brown Copley Newspapers
La Jolla, Calif.

Visualize passing through two compasses three feet apart carrying a gun made with a pound of iron. Ed.

Tellex Tape Subsystem Delivered in November

We appreciate the article by Frank Pista in the March 29 issue discussing Tellex. Mention was made of the Tellex 3420-equivalent tape subsystem, describing it as relatively new and about to be delivered.

It is a fact that Tellex delivered to a customer its initial 3420-type subsystem in November 1971 and has been in full-scale production of this subsystem for a number of months.

The subsystem, it should be stressed, is totally "new" generation in that it employs true radial technology, digital interfacing, microprogrammable controllers and offers full device-switching capability— it is not a "repackaged" 2420-type subsystem.

Michel T. Murphy Director of Sales
Tellex Computer Products, Inc.
Tulsa, Okla.

Dataprint Qualifies

Your four-part series on output techniques [CW, April 5-26] gave us a large measure of satisfaction in its furtherance of education in computer-controlled off-line printing as an economical and efficient method of operation.

However, we are somewhat mystified at the lack of mention of our CMC 36 Dataprint system, which meets all the economic and technical rationales outlined in your review. Dataprint is a computer-controlled, modular system that can run one or two 1403s, multiple type drives, and can be configured to meet user needs.

In spite of our concern at not being included in your article, we are pleased that your consideration of the subject lends credence to off-line printing having come of age.

E.R. Williams Vice-President, Marketing
and Support Services
Computer Machinery Corp.
Los Angeles, Calif.

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

Effective Analyst Must Acquire Not Achievement, But Growth

By Thomas W. Doctor Special to Computerworld

My description of what is required to become a truly effective business systems analyst in our business world: The Effective Analyst.

(Adapted, in part, from Eric Trist's keynote address to The Town Planning Institute of Canada, June 1968.)

Viewpoint

He knows he is most effective in an active planning.

Not achievement, but growth; Not self-control, but self-expression; Not independence, but interdependence; Not endurance of stress, but capacity for joy.

He knows he is most effective in an organization that has... Not mechanistic forms, but organic forms; Not competitive relations, but collaborative relations; Not separate objectives, but linked objectives; Not resources absolutely regarded as owned individually, but resources regarded also as the company's.

He knows he is most effective when his strategy (and that of his company) is one that has shifted... From responsive to crisis toward anticipative of crisis; From specific measures toward comprehensive measures; From requiring consent toward required participation; From short planning horizons toward long planning horizons; From damping conflict toward confronting conflict; From detailed central control toward generalization of central control; From standardized administration toward innovative administration; From separate services toward coordinated services; From passive planning toward active planning.

As you can observe, the effective analyst need not be a business systems analyst per se, but anyone who "thinks for a living." More important, however, are the objectives of business that prevent each of us from becoming as effective as we know we must be in order to progress profitably, professionally and personally.
Independents Could Hold Customers By Stressing Informed User Approach

Recently, I commented that the independent peripheral manufac-turers have made some in-road, whether or not this was inev-itable. Entry-level education of the independent computer industry capable only of parastic ex-istence, and if so then no true in-dustry exists.

A proposal that can often be taken to check one's assumption is to look for any weakness in the IBM position. This seems to me one of the most clear cut points — is the way current policies dictate that IBM treats its user, like beaks rather than responsible adults.

Because of this approach to treatment — and have never known anything better — IBM can claim its users must take

One of the advantages of the Furr Challenge Cup, offered to the best data processing school in the country, is that different questions arise and must be con-sidered.

Sometimes they are minor questions, such as whether or not alumni associations can enter a school, and sometimes there are major ones, such as what a school is.

Alumni associations definitely can enter the contest. In fact, there is more interest among alumni associations than schools.

There seems to be a good rea-son for this. The school runs into the same problem of getting all situa-tions in entering such a contest, whereas the alumni association can only increase the stature of its members by entering.

The problem is an interesting political argument — so if you are an independent, you can certainly act on it.

"The Question, "What Is a School?"", came from a systems analysis teaching organization.

The particular organization is Ware Associates of Hudson, Mass., which runs a post-gradu-ate course in systems analysis every month for Actea Life and Casually in Hartford, Conn. It has trained and taught students, and feels it has done some good work in teaching computer science within the meaning of the challenge.

The question is actually more complex than it originally ap-peared. This was emphasized by a chart of courses that Ware Associates puts out.

It listed a few apparently similar courses taught by a trainee sys-tems analyst for an experienced systems ana-lyst.

When you come down to it, this is a straightforward statement that in fact post-graduate educa-tion is a form of entry-level educa-tion, is a necessity. Entry level can be quite high for an expe-tained people also need up-dating and broadening.

This has been often obscured by the fact that entry-level courses, both at post-graduate and four-year colleges, is available, experienced education is now quite well available. There are not many people in the in-dustry who can take the time off to do a one-year sabatical study, and so the format of most school curricula simply does not lend itself to experienced educa-tion of people in the DP industry.

The problem has often been obscured by the fact that while entry-level, both at post-graduate and four-year, colleges, is available, experienced education is now quite well available. There are not many people in the in-dustry who can take the time off to do a one-year sabatical study, and so the format of most school curricula simply does not lend itself to experienced educa-tion of people in the DP industry.

Taylor Updates

There is also considerable doubt as to what such studies are for. Could we, for instance, while reading one cur-rend for a one-year course, system analysis course by Twicken-ham Technical College in Eng-land, that one of the items the students would be studying would be what they should be study-ing? (Don’t laugh — I think it is one of the most productive ap-proaches I can see — a 1972/73 one-year course).

But the real problem is that many experienced people do not have a year available.

The question, then, is how to best encourage the "experienced student" to enter the field if it is ne-cessary. Ware Associates is cur-rently providing a one-week training period, with the students taking appropriate selec-tions out of a fairly large menu of courses.

This way the individual stu-dent is gone in at least one week as much as they would be able to do in a one-year or three-week generalized course. This productivity results because the student always has certain backgrounds which may make some course material new for him, and always has some weaknesses which may make certain courses par-ticularly interesting to him, which encourages him to work excep-tionally hard.

It is an interesting approach which has been used to train many experienced people.

Whether or not it works, I really do not know yet. In addition, Ware Associates is the only organization that is doing this type of achievement and is one of the most productive approaches I can see — a 1972/73 one-year course.

So welcome to the Furr Chal-lenge Cup Contest, Ware Associ-ates. Your pioneering work may be rough, but it may be able to do more for the DP profes-sion than the polished work of others.

And that is the contest criteria being used to determine what a school is. The term "school" is — anything that helps the profes-sion, that improves knowledge and experience through formal instruction to students.

And that is why the Furr Chal-lenge Contest anyone else who feels they are making an advance in systems and DP edu-ca-tion. The rules are printed in the May 6, 1972, and April 26, 1972, issues. Just ask Paul Salcido know you intend to join and he will explain the rules to you. So you can see that in the Furr Challenge Contest, anyone else who feels they are making an advance in systems and DP education, can enter it, and just as often in data processing, there are unexpected benefits.

And I would like to point out a part of DP that it should be included in our planning.

Because the independent have adopted this approach IBM phil-oosophy and continued to ignore the needs of their users, we have so far failed to convert IBM's pol-icy into strong points which could make the independent peripheral and mainframe industries more attractive. But in one recent case, however, there seems to be a change, and the independent are showing strong to any error conditions or of modifica-tions being made to user records. In both cases the result is that the supposedly responsible user is deprived of the information he needs to run the system and take his own ini-tiative — and must remain just a puppet.

There are other cases where the IBM engineering design and marketing practices have key-boards as well as real essential information from their users. Keeping users ignorant strength-ens IBM's hold over the market. But once users are educated, such a policy can be a real weak-ness.

Ousted Philosophy

Because the independent have adopted this approach IBM phil-oosophy and continued to ignore the needs of their users, we have too far failed to convert IBM's pol-icy into strong points which could make the independent peripheral and mainframe industries more attractive. But in one recent case, however, there seems to be a change, and the independent are showing strong to any error conditions or of modifica-tions being made to user records. In both cases the result is that the supposedly responsible user is deprived of the information he needs to run the system and take his own ini-tiative — and must remain just a puppet.

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SOFTWARE AND MEASUREMENT

In this supplement, our editors will examine the current state of the software field, including:

- Improving CPU productivity through efficiency measurement packages.
- Time sharing packages.
- DOS enhancement from independent suppliers.
- New software support to RCA’s Spectra users.
- Improvements and new packages for small systems.
- Application and machine packages.

This supplement is must reading for computer users and must advertising for software marketers.

Closing is June 9. Contact your Computerworld representative soon, as ad space is limited. For details, call Dottie Travis or Dawn Silva at Computerworld: (617) 332-5606.
May 17, 1972

The Professional's Viewpoint

Grass Roots Want CDP Exam Questions Updated

By Mike Ingram, CDP

In response to a questionnaire in Computerworld earlier this year [CW, The Professional's Viewpoint, Jan. 26], the professional grass roots voiced very frank comments about the CDP exam. Topping the list of suggestions were:

- The CDP exam must be kept current by constantly updating the questions.
- "The Professional's Viewpoint" is prepared by the Society of Certified Data Processors in conjunction with the editors of Computerworld.

- "Non-relevant" education should not be counted for possible exam entry requirements.
- A broad background is preferred over specialized skills in satisfying exam entry requirements.

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The medium speed impact printer has just lost the price war.

<table>
<thead>
<tr>
<th>Average medium-speed printer</th>
<th>Matrix LP 860</th>
<th>Matrix LP 1150</th>
</tr>
</thead>
<tbody>
<tr>
<td>$8000+</td>
<td>$3900</td>
<td>$4300</td>
</tr>
<tr>
<td>400 lpm, 80 to 132 col. wide</td>
<td>600 lpm, 80 col. wide</td>
<td>500 lpm, 132 col. wide</td>
</tr>
</tbody>
</table>

Shipment on all Matrix printers and controllers 60 days ARO.
With 3 years of development work behind us, 23 different controllers, and hundreds of units in the field, Versatec is pleased to announce a major price breakthrough.

Consider a computer printer with a MTBF of over 3,000 hours. A printer that operates in almost total silence.

With a monthly maintenance charge of approximately $35. And works plug-to-plug with 23 minis and midis. This is the new Matrix Printer. At prices so reasonable that it would be sheer folly to overlook what we are about to say.

Do you really need multiple copies? If you really need simultaneous copies of your computer printout, we can't help you. Because as efficient as electrostatic technology has become, there is no way to get more than an original copy out of our printer.

You have to stick with an expensive impact printer.

But if you just need occasional copies—and there's an office copier close by—then read on. You're about to find an answer. Even at comparable prices, electrostatic printers have an edge. When we were planning to fill the product vacuum in the 500 to 600 Ipm range, we never had to think twice about employing the electrostatic technology.

For one thing, it is the only natural mate to a computer. Since our Matrix printer has no moving parts (except in the paper transport), the computer can talk electronically right onto the paper—without passing through a maze of wheels, gears, pins, and pounding keys.

The few moving parts eliminate most adjustments, alignment, and calibration, while increasing dependability. Noise is practically non-existent. By contrast, impact printers beat out 89 to 94 dB in most EDP areas. Deafness can be caused by repeated noise over 90 dB.

Paper costs, once high, are plummeting downward. Today, electrographic paper in quantity purchases runs about 1.3¢ to 1.7¢ per sheet. And the price continues to drop.

But mostly, the technology indicated that really low-cost printers were possible. Now with development costs out of the way, we are proving the truth of our early speculations.

Our long-range plans are paying off. Versatec is now prepared to take on the noisy impact printer market with printer and controller prices that can't be matched anywhere.

Our Matrix LP 860, with 600 Ipm, 80 columns wide, 64 ASCII characters, and 8½" fan fold paper, costs just $3900 in quantities of one! Optional 96 ASCII character operation is available for both models at no reduction in printing speed.

Our 23 controllers cost about 50% less than controllers for comparable performance impact printers. This is the same family of electrostatic printers now in use throughout the world. Backed by a 3-year-old company with sales and service offices in the U.S., Canada, 12 European countries, Israel, Australia, and Japan.

If you got this far, it must mean you're interested. And you should be. A price/performance story like this doesn't come along every day.

To understand the full significance of this price breakthrough, write for more information to Versatec Inc., 10100 Bubb Road, Cupertino, California 95014. Call (408) 257-9900. Or TWX 910-338-0243.

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Random Notes

Software Supports RCA Programs Under OS/360

NEW YORK — Users who have been emulating an RCA 501 on Spectra 70 equipment but are now considering a move to IBM 360/370 will be able to keep on using their second-generation programs under the RCA 501 Simulator package from Software Design Associates Inc. (SDA).

The package is said to support all RCA 501 instructions and all devices except paper tape. Communication with the simulator is handled through JCL, allowing it to modify the 501 programs.

The package runs under OS/MVT or MFT and requires 100K bytes of core. It is available for purchase or on lease plans, under which it costs $2,000/mo or $3,000/mo.

SHAREHOLDER SYSTEMS has a significantly enhanced Shareholder System Extended 08540.

Audit Trail to Systems, Files

The system is a set of modules which can be linked together to provide the security desired by the user. Some of the subsystems prevent unauthorized activities; others provide audit trails for changes.

One of the modules, for example, prevents unauthorized use of the computer itself. Another block adds changes, renaming or deletions to the operating systems unless they have been approved. A third module is said to prevent a virus or system from being altered or stolen, and a fourth prevents access to sensitive data, by storing data on tape or disk in scrambled form so that even a thief could not access it.

More positively, the system can note the exact date a program has been cataloged, changed, renamed or deleted. This facility will help those firms that develop software to verify that a production program has not been changed, or to identify the exact instructions or instructions that have been altered.

Some of the features do require modification of IBM's operating system, and in those cases where IBM refuses to modify the altered system, ACS will do it for the user, a spokesman said.

Written in Assembly Language, the system utilizes B-Transient type logic, requires 10K bytes maximum. It is priced at $7,000/module with an undetermined discount for purchase of the entire system. Lease plans are available.

ACS is at 12011 San Vicente Blvd., 90049.

Rapidata Extends T/S Services

RAPIDATA has implemented a trio of capabilities developed for a Century 200. Du-Com will also support of scratch files and the ability to create, rename and "unsave" permanent files are among the features added to Rapidata's Basic. Accounting functions to report terminal and CPU usage are also included, he noted.

FAIRFIELD, N.J. — Rapidata Inc. has added a report generator and a financial modeling system, neither of which requires strong DP experience to be used effectively, a spokesman said.

Support of scratch files and the ability to create, rename and "unsave" permanent files are among the features added to Rapidata's Basic. Accounting functions to report terminal and CPU usage are also included, he noted.

The Dosag-1 model calculates the BOD/DO at specific points in a stream system. If desired, the minimum DO in a stream may be compared to a predetermined DO level. If the DO is too low, the model will compute the amount of flow augmentation required to bring the DO up to the desired level.

Qual-1, on the other hand, takes user-specified parameters and routes them through a series of streams or tanks on an hourly basis. The program begins the routing calculations from the point farthest upstream, and modifies the formulations as waste discharges, withdrawals, tributary flows and incremental runoffs are added.
Standard Practices Help Both Buyer And Seller of Excess CPU Time: TBI

ELMSFORD, N.Y. — Selling excess computer time is an important secondary function of a DP installation and can add tremendously to the profitability of the seller's installation.

But, warns Time Brokers Inc. (TBI), the computer center should be treated as a profit center and it should be justified by a primary function alone, and not "bailed out" by selling time.

Time sales have become so common that TBI recently developed guidelines as aids to both buyer and seller. With such rules, companies can decide, whether or not they are likely to be successful, even before they make the decision to sell.

An important factor in determining the amount of excess time available for sale is the effectiveness of the DP management in scheduling internal jobs. Beyond that, each seller faces a "unique market" situation, depending on his hardware and software configuration, his location, and the way he operates his installation, TBI said.

The vast majority of sellers price their time based on the number of hours and minutes the buyer has possession of the equipment, regardless of how much meter-time is used.

Generally prices rise as computing power, core size, number of peripherals and internal speeds increase.

Price quoted for a given configuration normally includes all components even if they are not used by the buyer's program. Prices tend to vary, however, from prime time, to second shift, to weekend "bar gain" rates, the company added.

Third shift time is hard to sell, even when the price is only half of the prime rate, TBI warned. Third shift time is best used for in-house jobs of a low priority, a spokesman for the firm suggested.

Traditionally, time buyers run their own jobs and have complete responsibility for time used on the computer. Only in case of machine malfunction will charges be waived. This pattern holds true even when the seller provides an operator to process the buyer's work.

Multiprogramming Problems

Such "traditional" approaches work well in stand-alone processing, but it is often difficult to determine responsibility in case of "bomb outs" that occur in multiprogramming environments.

Whether charges should be applied in these cases should be determined on a case-by-case basis, TBI said.

Both buyer and seller should be clear about rates, configurations, and when time is to be used, when they negotiate for a time sale. Beyond such basics, however, they should also consider which party provides the operator, paper and cards, and scratch tapes and disks.

Copies of a standard contract between buyer and seller, as well as copies of the Uniform Guide for Computer Time Marketing, are available free from TBI, 500 Executive Blvd., 10523.

Plotting Package Aids DP Novices

CARSON, Calif. — Many plotting packages are available as subroutine libraries to be called by user-written programs, but Fasplt from Verified Software Products Co. can be used directly by engineers or businessmen without extensive DP experience, the company said.

The package functions with minimum control statements and accepts plot data from punched cards, magnetic tape, disks or drums. It can also work with data as it is generated by user-coded application programs, a spokesman noted.

It runs in two modes. In Automatic mode, it produces a set of plots, one for each user data variable, with as little as five curves, each with a different symbol placed at selected data point intervals, and having five annotation lines, a legend, and a company logo, he explained.

Fasplt is operational on Univac 1108 and IBM 360 where it is reportedly producing report sized plots in less than two seconds, while using 110K or fewer bytes of core.

The package drives Calcomp, Zeta and Complot plotters and "is designed to be compatible with any other plotter or printer/ploter," the company said.

Fasplt is available at $115/mo with a one-year lease, from $426.2 Gladick St., 90746.

Insurance Illustrations Produced on T/S Network

STAMFORD, Conn. — The Insurance Sales Support System (ISSS), which generates sales illustrations for insurance prospects, is available on a time-sharing basis through National CSS.

It can slow on a year-by-year basis the costs of the proposed plan, its benefits, tax advantages and estate values and other practical data useful in sales presentations, National CSS said.

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Who do you think would introduce the first 4800 bps multi-point modem that equalizes itself? Codex, the people who made high-speed modems as common as apple pie.

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COMUNICATIONS

Data Briefs

Vadic Has Bell, IBM Compatible Data Sets

PALO ALTO, Calif. — Vadic Corp. has announced an IBM- and Bell-compatible modem that will operate asynchronously at speeds from 134.5 to 1,800 bits/sec.

Designated the VAD 108, the unit contains circuit boards to hold two Bell-type compatible line adapters, and a power supply. The front panel of the unit has a power indicator and a carrier indicator for each channel in addition to local test and remote loop-back features.

Prices for the modem start at $300 and depend on configuration, the company said. The unit is available in 30 days from Vadic at 916 Commercial St., 94303.

Monitor Spots Line Troubles

SUNNYVALE, Calif. — A line monitor designed to locate line malfunctions between remote terminals and central DP sites has been introduced by ESL Inc.

Designated the DM 108, the monitor includes an indicator panel that can operate up to 100 ft. from the interface. The device can monitor up to 14 EIA interface signals such as data transfer, data receive and data terminal ready.

The monitor is normally connected between the user's terminal equipment and modem and the display panel can indicate failures that occur at a terminal, transmission line or central site, the company said.

The monitor costs about $300. ESL Inc. is at 495 Java Drive, 94086.

Independent Inspectors Favored

WASHINGTON, D.C. — Any certification of customer-provided equipment should be done by independent licensed inspectors. This position was included in a recent letter to FCC Chairman Dean Burch from Edwin E. Kirby, president of Control Inc.

Citing recent recommendations for a certification program presented by the PBX procedures and enforcement subcommittee, Kirby said independent inspectors and vendors to have equipment inspectors on their own staff. There would be a tendency for such staff inspectors to "certify now and correct later" when problems are found, Kirby said.

An independent testing laboratory for certification is the logical method for any final certification plan, Kirby said.

ICC Modems Reduce Turnaround

MIAMI — International Communications Corp. has introduced two MOS LSI modems with optional fast line turn-around and remote test capabilities.

Designated the Modem 24 LSI and Modem 20 LSI, the units operate at 2,400 and 2,000 bit/sec with a turnaround time of 8.5 msec. Normal line turnaround on Bell 201 or compatible modems is 150 msec, an ICC spokesman said. The increased turnaround speed, which ICC says can double throughput in some applications, results from a feature called Fastac which makes it unnecessary to wait for the echo.

Suppressors are included to turn around on the line, the spokesman said.

Both modems offer a standard self-test pattern generator feature which allows a line to be tested manually at both ends. The optional remote test feature allows an operator at a central site to activate loop-back switches at outlying installations by remote control. Auto answer and reverse-channel options are also available.

The basic modems cost $1,780 and lease prices for the modem start at $350.

Com-Share Evaluates Data Terminals

By Ronald A. Frank

of the CW Staff

ANN ARBOR, Mich. — For a time-share user, the communications link he establishes through his terminal determines how well he can interface with the capabilities of the service.

If a terminal is not compatible with the line speeds, software or other specifications set by the time-sharing firm, the user may be limited in his operations.

Recognizing this importance in terminals, modems and other equipment, Com-Share Inc. has established its Terminal Evaluation and Support Program (Tesp) to test the performance and reliability features of such devices.

"After purchasing or leasing a terminal unit, the time-share user may discover that his terminal is limited in capability, unreliable, or the supplier does not provide proper maintenance and support," the company said.

Com-Share's 'certify now and correct later' policy means that the user inquires about test results before purchase, a spokesman said.

Under the Tesp program, several terminals are tested each month after submission by vendors. Included in the tests are teletypewriters, CRTs, portable terminals and remote batch terminals, including those with "intelligence" in the form of expanded storage.

About 20% of the equipment submitted for test is rejected overall, a spokesman said, and about 20 suppliers now have the Com-Share seal of approval.

In addition to testing the operating characteristics of a terminal, Com-Share technicians often dismantle the unit under test to check individual components. "Unless the vendor allows us to do that," the spokesman said, "we cannot be certain that it meets our requirements," Duffendack said.

Component Testing

In addition to evaluating equipment for user efficiency, Com-Share requires that suppliers allow the dismantling and testing of individual components where necessary. The time-share firm will suggest circuit modifications if required to interface with Com-Share hardware and software capabilities.

The firm uses XDS CPUs in its network and compatibility with this equipment is stressed.

Although the Tesp program is designed primarily to aid Com-Share subscribers in the selection of equipment, the firm will provide evaluation results and a list of approved equipment, Duffendack added.

Com-Share is at 3853 Research Park Drive, 94016.

Telecommunications

M.S. Degree Offered

BOULDER, Colo. — A graduate-level program in telecommunications at the University of Colorado leads to a Master of Science degree in telecommunications management.

The new curriculum is designed to "train communications generalists for management positions," according to Professor S.W. Matey.

The degree program can be completed in one calendar year of three semesters and includes courses in telecommunications and communications theory. Regulatory concepts and the role of government in telecommunications are also included.

The university now offers a master's and doctorate program in computer science and this department will help sponsor the telecommunications program, a spokesman said.

Information about the program is available from Prof. Frank Barnes, chairman of electrical engineering, or Prof. George Codd, chairman of political science at the University in Boulder, 80302.

Couplers Tie Instruments, CPUs

SANTA CLARA, Calif. — A series of couplers designed to connect analog or digital instruments to computer systems has been introduced by Ambient Systems Inc.

Called the Datapas 400 Series, the couplers convert data into computer-compatible format in on-line or off-line mode. On-line data can be entered directly into a CPU or through a teletypewriter grade terminal operating at 10 char/sec, a spokesman said.

Each of the six couplers in the 400 Series includes a "memo log" circuit card that determines the data code format. In addition to Echol, BCD and ASCII, most formats can be supported. The plug-in circuit cards can be alternated for varied format usage, the company said.

The 400 Series couplers cost from $995 for the 410 to $2,995 for the 460 which includes a 10-channel multiplex capability. The units are available in 45 days from Ambient systems at 3020 Scott Blvd., 95050.

Component Testing

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Private Line Rates Increased

WASHINGTON, D.C. — Price increases on AT&T monthly service terminal charges and installation rates for private lines were allowed to take effect on May 4 pending FCC action.

The rate hikes were originally suspended by the commission for 90 days but the time period ran out before the issue could be considered. Although the higher rates will be in effect, the commission has told AT&T that it will have to refund the extra revenue if the increases are rejected.

The increased charges cover private line services such as 3000 series lines used by many data users. Installation rates for a 3002 line will be increased from $10/line to $50/line. In addition the monthly service terminal charge will jump from $12.50 to $15/channel for half duplex service and from $13.75 to $16.50/channel for full duplex service.

When AT&T first proposed the higher rates late last year, the FCC included the proposal in the long-standing Telpak private line docket 18128.

Among the firms that have filed objection to the increased charges are Bunker Ramo, Eastern and United Air Lines, Litton Industries, MCI, the Independent Data Communications Manufacturers Association, National Data Corp.

AT&T has estimated that the increases will bring in an additional $30 million per year in increased revenues — covering 1000, 2000, 3000, 4000, 5000, and 8000 series private line offerings of both voice and teleprinter channel grades.

Metroprocessing Offers 16-Key Tone Coupler

WHITE PLAINS, N.Y. — Metroprocessing Corp. of America has introduced a 16-key acoustically-coupled "terminal" that generates standard Touch-Tone codes.

The four extra keys can be used for data security codes, alphabetic shifts, and data-field designations, according to the company. All tones generated by the FT-1660 "follow telephone industry standards" and will work with computer systems capable of receiving Touch-Tone signals such as voice response systems.

The device includes a "slip-on" acoustic coupler which fits over the telephone portion of the phone handset rather than the more conventional cradle-type coupler.

The FT-1660 includes the letters "O" and "Z" and punctuation marks to provide complete alphanumeric capability, the company said. The FT-1660 sells for $200. A 12-key model is also available for $185 from 64 Prospect St., 10606.

Badger Adds Packages For DTS-100 Terminal

RICHMOND, Calif. — Badger Meter Inc. has added two no-cost packages to the software utilities library for users of the DTS-100 remote batch terminal.

A Husp "multileaving" package is said to allow data transmission at 19.2 kbit/sec. The software supports card-oriented jobs to be printed while magnetic tape data is being transmitted. The package allows the DTS-100 to handle 7- or 9-track tapes in formats up to 2 kbyte/record at 56 or 800 bit/ins.

The Husp package supports full data compression to improve throughput rates using either multiple file reels or multiple rest files, the company said.

The Terminal Program Generator (TPG) makes stand-alone processing of the DTS-100 available to the user. The TPG package employs high-level language to condition, process and output data to peripheral devices.

The package supports all DTS-100 peripherals including used units, software and printer. Coding specifications describe input/output formats, processing and report formats included in the package.

The Electronics Division of Badger Meter is at 150 East Standard Ave.
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Leasing and Industrial Loans
Proper Tape Care Can Pay for Itself

Given the high cost of tape media, it is crucial to protect the tape during storage and use. Improper tape handling can lead to expensive errors. Let's delve into the proper tape care practices and how they can contribute to cost savings.

Add-Ons Expand 360/30s, 40s

For those looking to expand their storage capacity, there are several add-on options available for the 360/30s and 40s series. These can help in increasing the capacity while maintaining the performance and reliability of the system. Let's explore some of these options.

Terabyte Controls

The Terabyte Controls add-on offers significant improvements in data transfer rates and capacity. It is designed to integrate seamlessly with the existing system architecture, ensuring minimal disruption to daily operations. With the Terabyte Controls, users can expect enhanced performance and reduced turnaround times.

Incidental Logic

Incidental Logic specializes in providing custom solutions to meet the specific requirements of each customer. Their expertise lies in developing innovative add-ons that not only expand capacity but also optimize system efficiency. This partnership ensures that users receive tailored solutions that align with their business needs.

Memory Expansion

Memory expansion is a critical aspect of system enhancement. By adding more memory, users can support larger data sets, enabling more complex and resource-intensive applications. This not only boosts efficiency but also prepares the system for future growth.

So, in conclusion, taking the time to properly care for tape media and invest in reliable add-ons can significantly reduce operational costs and improve system performance. It's a win-win scenario for businesses looking to maximize their investment in data storage systems.
Teller Terminal Features CRT, Performs Computations Off-Line

TRUMBULL, Conn. — The latest series of teller terminals from Bunker Ramo is said to include the first CRT-equipped units designed specifically for on-line use in the banking industry. The 2001 Universal Teller Terminal uses its displays to provide such information as account data, tutorial routines for the operator, and visual verification of data being read and edited.

Designed for use in both savings and commercial banks, the unit features a microprogramming processing unit to permit such changes in procedure as the handling of new types of accounts, or changes in interest or operational charges, to be made overnight, the company said. Calculations can be performed and data collected in the off-line mode, the company added.

Communications costs are kept to a minimum through the use of a network arrangement that allows up to 12 teller terminals to share a single modem, and up to eight modems to be handled on a single circuit at 1,200 to 2,400 bit/sec, according to the firm.

Several optional key board arrangements are available. These include alphanumeric, 90-key full numeric and 11-key numerical configuration.

A block of 32 function keys allows selection of single or multiple transactions and functions by the teller. Combined with the CRT, the keyboard also can be used as an adding machine for off-line computation.

The 2001 is equipped with a printer that imprints passbooks and prints journal tape entries and transaction tickets for each transaction at a speed of 60 char./sec.

The printer can also be used to prepare checks and other documents, the company said. An optional feature of the 2001 allows automatic off-line data collection.

The 2001 Teller Terminal includes a CRT for displaying customer transaction data.

The 2001 terminal is priced at about $9,000. It will be available during the second quarter of 1973, according to Bunker Ramo.

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In addition more than a dozen search charts pinpoint the characteris- tics and capabilities of 1,000 different devices. Also included are 286 computer sys- tems, 540 peripherals and 220 data communications terminals providing you with the single most comprehensive source of information available today.

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Disk System Offers Megaword Capacity, Fast Access Times

FAIRFIELD, N.J. — A fixed-head disk drive system from Digital Computer Con- trols, Inc. offers minicomputer users com- patibility with DEC's PDPA-D and RFO8, and an on-line capacity of 16 mwords.

The DU-1 disk and DC-1 controller pro- vide access to as much as 256K 12-bit words per drive with an average access time of 8.4 msec.

Data is stored on each surface in 128 data tracks with a capacity of 2K word/ track. Maximum data transfer rate is 3 Mbit/sec.

Damage to heads and disk surfaces dur- ing shipment or system relocation is pre- vented by an automatic mechanism that lifts all heads during start-up time and, after power-off, when the disk is slowing to a stop.

A manual front panel switch on the controller allows the operator to select one of four interface ratios — 1:1, 2:1, 4:1 and 8:1, in order to allow the com- puter to handle more on-line peripherals.

A system can consist of one to four DU-1 disk drives and a DC-1 controller. The DC-1 is compatible with DEC software.

The controller and one disk are priced at $11,000, with each added disk at $9,000. Delivery is 30 days from 12 Industrial Rd., 07006.

Controllers Connect IBM Drives to Minis

RED BANK, N.J. — Diva Inc. has de- veloped a DC series of controllers that enables data prepared on a minicomputer to be used on an IBM 360 or 370 system.

An additional DD series of disk drives is available in models that are compat- ible with most 360 and 370 disk drives — including the 2311, 2310, 2314, 5440, or 3330.

The controller allows the attachment of any of these drives to a variety of minis including the Data General Nova, DEC PDP-8 and PDP-11, IBM 1130, Interdata 70 and 80 and others.

An IBM modula-compatibility option, DM-234, modifies the controller to en- able data to be written on the disks in a format that is directly readable by IBM systems.

Diva offers its units as either controllers only for connection to the user's disk equipment or as disk systems. The price of the DC series of controllers starts at $7,000 and varies with the model of mini- computer and disk drive. The DM-234 compatibility option adds $3,500 to the controller price.

The Diva DD/DC systems consist of the controller and from one to eight disk drives. Prices for the systems start at $11,700 for the 2310-compatible drive and at $16,500 for the 2314-type unit.

Diva Inc. is at 58 Maple Ave., 07701.

Register Data Converted

To Tape With Victor Units

CHILCO, CO — Fast-entry, high-speed electronic data acquisition has been introduced by Victor Comptometer Corp., for the chain retailer and middle- to-large size single store owner.

A magnetic tape cartridge connected to the cash register records all sales informa- tion. The magnetic tape is mailed to headquarters or data center for conver- sion in minutes to industry-compatible tape that can be used with any general- purpose computer.

The cash register system contains all the normal point-of-sale features such as cus- tomer receipt, visible indication, tamper- proof audit tape, key locks for clerk drawers and flash totals. The cash regis- ter/tape recorder is priced at about $3,000. The tape converter including tape drives will cost about $15,000.

Units are available on six-month deliver- ery from 3900 N. Rockwell St., 60618.
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Honeywell 700 Lease Prices
Range From $1,020-$5,500/mo

WALTHAM, Mass. — Prices for typical configurations of the recently announced Honeywell System 700 (CW, May 3) range from $1,020 to $5,500/mo on a one-year lease.

A typical Terminal System for controlling eight terminals and including a host computer link and a 716 mini with 12K memory can be leased for $1,500/mo or purchased for about $112,000.

The Multipurpose System is designed for program development, extensive data multiplex control unit, paper tape reader and punch, Teletype ASR 33 and a 900K word removable disk system. A one-year lease costs $2,235/mo and purchase price is $45,270.

The Terminal System can handle eight terminals and communicate with a host computer. A Remote Line Concentrator to handle four lines includes an 8K 716, real-time clock/timer synchronous single-line controller, low-speed multiline controller and carries a one-year lease price of $1,020/mo and a price tag of $28,400.

The 316-based Multipurpose and Batch Processing systems are available for immediate delivery. The other 700 Systems will be ready in July, Honeywell said.

The Remcom 2775 Remote Batch Terminal teamed up with a 360/370 System. The harmony is flawless. 135 LPM and 400 CPM for less than $600 per month.

A few other rave notices about the Remcom 2775:

- You can use it as terminal to terminal over the dial-up network.
- You can use it as a print-only station.
- You've got Data Compression as a standard feature plus complete compatibility with all Remcom 2780's.

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United States

The price for the first 4K of expansion memory is $3,327. Additional 4K increments cost $1,483. Delivery is 30 days from 6955 Hayvenhurst, 91406.

The Terminal System can handle eight terminals and communicate with a host computer.

A Remote Line Concentrator to handle four lines includes an 8K 716, real-time clock/timer synchronous single-line controller, low-speed multiline controller and carries a one-year lease price of $1,020/mo and a price tag of $28,400.

The 316-based Multipurpose and Batch Processing systems are available for immediate delivery. The other 700 Systems will be ready in July, Honeywell said.

Larger Disks Added To All Xerox Sigmas, 11-High Pack Used

EL SEGUNDO, Calif. — Xerox Corp. (formerly Xerox Data Systems) has introduced two large-capacity disk drives for all members of the Xerox Sigma family of computers.

The new drives, the first to be manufactured by Xerox, will be offered to users in addition to the older CDC-produced disk units.

Data Capacity

The primary difference between the Model 7260 and the Model 7265 is data capacity, according to Xerox. The 7260 unit stores a minimum of 908M bytes, expandable to 675M bytes, while the larger 7265 can store up to 1,365M bytes. Access time averages 30 msec and transfer rates are up to 512 Kbyte/sec. Dual access arms are open source.

Other features include electro-optical tracking for precision-head positioning, thermal composition to minimize off-track errors caused by temperature changes, hardware write protect and independent seek operations which allow overlapping to minimum access time.

The drives use a standard 11-high disk pack, similar to that used with the IBM 3341 disk drive. The 7260 records data at 100 cyl/in. with 200 working plus three spare cylinder/surface. Each cylinder contains 20 tracks with 11 sector/track. The larger 7265 records at 200 cyl/in. Each surface contains 404 working cylinders plus seven spares. A 4-byte, 32-bit word length is used.

The 7260 in a typical configuration of four drives with a capacity of 180M bytes leases for $2,780/mo for one year, and sells for $11,200. It will be available in the fourth quarter of 1972.

The 7265 in a typical configuration of eight drives with a capacity of 728M bytes leases for $4,125/mo for one year, and sells for $165,500. It will be available during the first quarter of 1973.

Printer/Plotter Said To Have 14-in. Format

IRVINE, Calif. — The Variant Data Machines Statos 31 is claimed as the first electrostatic printer/plotter with 14-in. format which will operate on-line to most minicomputers.

The unit's features are:

- Produces a 14-in. by 11-in. plot in 5 seconds.
- Prints 1,000 line/min in virtual silence.
- Simultaneously plots and prints alphabets.
- Interfaces in either print or plot mode.

Three design innovations include Auto-step, a command sequence to maximize high-speed computer operation; Servo-lock, a power-driven system for precise data at very high speeds; and Dual-Stage, a toning process to insure uniform record quality over all speed ranges.

The Statos 31 will be available at $10,400, including a typical interface, this summer.

Solid State Add-On Memory Means Savings on 316/S16s

VAN NUYS, Calif. — A plug-compatible solid-state expansion memory for Honeywell 316/516 and DDP-316 computers from Signal Galaxies comes in 4K to 28K configurations and offers a price reduction for Honeywell users, according to the company. For example, a Signal Galaxies' 8K memory costs $4,810, a savings of approximately $10,000, the company explained.

The price for the first 4K of expansion memory is $3,327. Additional 4K increments cost $1,483. Delivery is 30 days from 6955 Hayvenhurst, 91406.
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Car Maker Meets Demand With Modular Systems

By Molly Upton

NEWTON, Mass. — With a centralized administration, data processing is playing an active role in increasing productivity at Fiat, Italy’s largest car manufacturer. Rather than constructing a management information system for the entire corporation, Fiat has chosen to build subsystems, which give managers on different corporate levels access to the information they need, as well as providing “building blocks of data” for their superiors.

The firm uses Honeywell, IBM, Burroughs and other equipment. Yearly rental for DP equipment installed in Italy runs about $15 million to $16 million, and about $6 million elsewhere, according to Paolo Sardi, director of systems and information for Fiat.

There are no special problems with the multivendor approach, since the machine is suited to the application, Sardi noted during an interview here.

The subsystem, or multilevel approach to MIS, is used in 18 installations in Italy, 12 in Europe and six overseas. There are about 600 analysts and programmers, out of a total employment of 190,000 for the firm’s car, tractor and diversified product divisions.

All DP purchasing, training and education of DP personnel are done through the central office in Turin, Italy, which also reviews requests for new applications. Since Cobol and Fortran are the only languages used, there is a large degree of flexibility in the system, he said.

In the marketing department, orders from 32 Italian branches and more than 400 dealers and overseas are transmitted to Turin, where production considerations, such as number of workers, left- or right-hand drive, are added.

Orders are filed by date, but production factors, such as enough orders for a full assembly line of one model, determine the order of manufacture. When a car does not match an order, the original order is reinserted in the computer file, which is searched for an order for that particular type of car. Then, each car is kept on file for six months.

Spare Part Ordering

Computers also supervise an automatic reordering system for spare parts. Currently there are three GE 437s and GE 130s which handle 100,000 transactions a day for the 32 branches. The warehouse stocks 140,000 items.

Fiat is constructing another warehouse outside of Turin, which will have a Honeywell dual processor Model 6606 with 256K, 36-bit words, two Datanet communications processors, each with 32K and four Model 316 minis. A DDS 190 disk system with 12 drives and two dual-channel subsystems with a capacity of 1.6 billion characters, and eight tape drives, two printers, card readers and punch have also been ordered.

The warehouse will have an on-line real-time automatic selection system, with a stacker crane and conveyors driven by the 6606 through the minicomputers.

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It's that simple. You can now have all of the price, performance and operational advantages of Courier Executerm Terminals for local hook-up... directly into the input/output channel of your IBM System/360 or/370.

You can replace your 2260s now, with Courier Terminals, plug-for-plug, and gain the features of the 3270... at impressive cost savings. And this is with no software changes. Best of all, the beautifully styled Executerm's reliability is assured with more than 2,000 Courier Terminals in use... tried, proven and accepted. Courier's marketing and systems design help you achieve optimum system configuration. Above all... Courier is responsive!

Courier is the easy way to streamline your data processing operation. Whether you're in office automation, data processing, corporate systems... Courier can aim for the same goal you set for yourself.

Courier is also conducting an intensive study on the feasibility of more peripherals.

The computerized system is based on a Burroughs B 3500 central computer linked by private lines to TC 500 terminals in each of the five new towns.

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Sanders... with its can-do system... can do it all for you!

As a systems marketer, you know it has to be done again and again. A customer wants a product — he wants you to promise, a tele-processing capability that can offer an instant service — promise you can make something you can't envision, new product development you can't handle.

It's often happen again how you can offer it all — and deliver. You can fill the gap on your "systems package" through Sanders Data Systems, Inc.

The Sanders CAN-DO SYSTEM is the one and only single-source peripheral system with total business-oriented data entry, inquiry, hard-copy output, remote batch-processing and telecommunications capabilities. The CAN-DO SYSTEM (many components shown at left) includes microprocessor, programmable displays, storage disks, a full line of printers, internal and external modems, card readers and tape cassette recorders/readers.

It's all available to you now — with attractive OEM discounts. And it's tied together with a nationwide organization of service/support centers. Sanders offers to work with you in developing marketing programs as well as new systems hardware and software to meet special applications.

That's the package — a total system offering from a single source you can count on. Get the whole story. The attached reply card will help bring it to you.

A. Microprocessor
Economical 16-bit instruction word/serial processor operating on 8-bit data — with execution unit, arithmetic-logic unit and 70-instruction set. Solid-state control memory contains up to 4,096 sixteen-bit words.

B. Series 800 Programmable Terminal Systems
A stand-alone system or, if clustered, expandable to 32 display terminals, employing standard software modules, with 480 to 1920 character memory, programmable 16-bit microprocessors. Three basic configurations: a Communications Processor Control Unit, a Terminal Processor Control Unit and a Local Terminal Processor Control Unit.

C. Magnetic Disk Transport
A compact, field-proven disk transport which provides remote 5 megabyte storage on a 5400-style magnetic cartridge in a clustered programmable display terminal system. A typical disk system having a 60ms average access time contains one microprocessor and four 2K-character display terminals.

D. Card Reader
Available in compact tabletop or rack-mounted models. Reads 360 cards per minute each with 80- or 51-column cards.

E. 3130 Line Printer
An economical, impact line printer with 200 line/minute average speed with 64-character ASCII set (110 LPM and 96-character set optional). Single line buffer for smooth operation. Desk or pedestal mounting. Characters easily interchanged by snapping on/off print belt. Also available: 100 LPM and 30 CPS printers.

F. Dual Cassette Tape Transport
Convenient magnetic tape medium can store 300,000 characters per cassette at 400 BPI, with a 100-inch/second search speed and variable record length of up to 2,048 characters.

... Modems
Rated at less than 1 error per 100K bits, modems are available for either 115 to 1800 bps asynchronous or 2400 bps synchronous communications with all standard WE features. A choice of plug-in modem card or cabinet-enclosed modem pack is available.
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- Advanced Data Display/Graphics System
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- Education & research
- Utilities (transport, comm., gas, electric)
- Government (federal, state, local, military)
- Services (software, time-sharing, leasing, consulting)

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**City**

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done for the transfer, and with careful design control suitable for a specified operating system, the transfer can be made, but it will not occur automatically," the report warns. There is presently a problem in capturing data in machine-readable form, the study says.

In the long term, it says, digital computer-readable forms for information are probably the best forms. However, because of the presently "incomplete penetration of this technology into publication activities" and the economics of conversion into machine-readable forms, near-term and mid-range plans and developments must be based on image storage for most primary documents.

"To speculate on the ability to store and use large computer-readable information files without being able to ensure that they can be prepared" economically "is of little or no value," it adds. The report also notes that the software for "organizing and managing large computer file systems" is still in an embryonic state. "The library community must press the computer industry to develop such systems to meet their particular needs, it believes.

"Most 'Take Advantage'

And if present libraries and other information-producing organizations do not take advantage of new techniques to provide greater information accessibility they may well "become obsolete," the report goes on.

In the past, however, efforts at development of systems in this area have suffered "from the lack of off-the-shelf input and output devices capable of handling an appropriate character set. They also have been hindered by the costs of storing or handling large files, injured by the growing pains of the adolescent computer industry, and lacking in comprehensive national cooperation toward a unified objective," the group states.

New Intellectual Routes

To help overcome the problems facing the libraries and other information resources, information that has been organized along traditional lines in the past must be reorganized and somehow made accessible via new intellectual routes. Information entities that were unrelated before must be brought together under new categorizations," the report says. It notes that "the library and information community is large enough and important enough to influence some products of the computer industry," but would be better equipped to wield this influence if it was not so fragmented relative to technological objectives and requirements.

The library community also has to try to develop transferable systems, according to the report.

'Widespread Misconceptions'

"There are widespread misconceptions about transferability of computer processes, especially among those who have not used it," the report says. "The great flexibility, generality and computational speed of computers have encouraged the development of a legend about the ability to take an isolated accomplishment and use it elsewhere with minimal, if any, work required to perform the transplant," the study continues.

"If adequate prior planning has been

747 Flies Seattle-Tel Aviv
In 3 Minutes of Schedule

MANHASSET, N.Y. — El Al Israel Airlines recently completed one of the longest Boeing 747 flight deliveries from Seattle to Tel Aviv with the help of complex flight planning.

Total flight time for the 6,147 nautical mile route was 12 hours and 32 minutes. The flight was completed within three minutes of the elapsed time projected.

Alternatives Calculated

El Al has used complex flight planning services on all its North Atlantic flights since May 1971. The Speas Associates computer automatically calculates en-route reclamation alternatives for the crew while developing optimum flight plans. Speas Associates provides computer services for 63 world airlines.
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EDOS is... EDOS was developed by The Computer Company to improve the performance and operational characteristics of the IBM Disk Operating System (DOS) on your System/360 or System/370. EDOS is the new support for the DOS user. EDOS is a continuing series of system releases offering coordinated enhancements to DOS. Through this, and future releases of EDOS, the current DOS user is provided both continuing support and the development of additional integrated enhancements. EDOS is, therefore, the Extended Disk Operating System. However, it is more; it is in many cases a logical alternative to DOS. EDOS is modular. Each feature of EDOS is optional, minimizing the storage requirements of EDOS for each installation. The Resident additional storage requirement for most installations is less than 2K.

EDOS is 100% compatible with DOS. All IBM written and user written programs will operate under EDOS without modification. No modification to the programs, job control language, or data files is required. EDOS programs do not need to be re-written. Problem programs can be run under the control of EDOS and then be immediately run under DOS control if you desire. EDOS benefits are universal, from the 32K DOS system to the larger users who may be considering a DOS to OS conversion.

EDOS is extremely easy to install since no changes are required to install your current operation.

PERFORMANCE! EDOS improves performance. The primary purpose of EDOS is to improve the throughput of your current system. This is accomplished by providing:

1. Additional new features to allow optimum use of your hardware configuration.
2. An improved operating environment for your system operators.
3. Enhanced functional characteristics of existing features.

Some installations have realized overall throughput improvements of 25% with EDOS. Equally important are the EDOS features, like six partition support, that provide new application opportunities.

INEXPENSIVE! EDOS is inexpensive. With all of the features and performance that EDOS provides, its compatibility and ease of installation, we believe you will want to evaluate it in your own installation. We frankly believe you will agree that EDOS is the best existing systems software available. A 60 day free evaluation period is provided. The basic System Release 4 of EDOS (all features except six partition support) has a lease price of $225.00 per month. The full System Release 4 of EDOS (including six partition support) has a lease price of $300.00 per month.

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Norman Benedict uses time-sharing for appraisal work.

"For the appraisal system for a year, is tied into the General Electric time-sharing network for his appraisal work.

"Appraisers who do not use computer systems will lose clients in the future," he reasons. Most clients are beginning to demand that their outside consultants use modern business practices, and the computer is a major tool of modern society.

Most appraisers today operate by a "seat of the pants" method, Benedict said, making informed guesses about the value of property over the long term.

"But with the computer system," he claimed, "I can make much better informed judgments. For example, I can use the system to anticipate population shifts, probable changes in the structure, and potential value of various sized lots over a period of years." Most of the work could be done manually with calculator and slide rule, Benedict admitted, "but it is too time consuming and too costly," he added.

In addition, he said manual methods are not as flexible as the computer system. "I can change one input on the computer system and get a quick reading of its impact on the entire appraisal," he said, "but with the manual system recomputing the entire system to change just one input would be unrealistic.

At the same time, Benedict said the computer system was "extremely cost competitive" with the manual methods even though it provided more information.

Benedict said he uses a calculator for very basic computations and turns to the computer system when the problems become more complex. The total cost is around $200 a month using the time sharing system.

The biggest problem he has found in using the system is "not knowing how to use the software development people. "It really helps," he said, "to be able to work through the Educare group."

"It gives me contacts with other users in the same business and in many cases some other user has solved a problem that I have just discovered which saves me the work of having to carry out the development on my own."

Soon the clients will get even more sophisticated, he said. "They will not only ask the appraiser if he uses a computer, but will also want to know what programs he is using and how sophisticated he is," he said.

Today his field and other areas are just at the beginning of computer use, he said. "So far," he said, "we are just using the computer to do work that could be done manually - but we are doing it better and faster than possible before.

"In the future, when the costs come down we will turn to larger storage and more sharing of data base information on such subjects as population growth, taxes, etc.," he said.

S/3 Gets Disk Cartridge
NEW WINDSOR, N.Y. - A disk cartridge for the System 3 Model 1 and Model 2 or 3 drives that is guaranteed to meet or exceed all IBM specifications is available from Monarch Metrodyne. Complete with white Lexan cover, the cartridge costs $160 and is available from stock.
PGI Proudly Introduces...

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Architectural of Data Base Systems
Subject of 2-Day ACM Session

ATLANTIC CITY, N.J. — Programmers and analysts can take part in a seminar on data base management systems architecture to be conducted by the Association for Computing Machinery (ACM) May 19 and 20. The two-day session, at the Hotel Dennis, will be based on the capabilities specified in the April 1971 Codasyl Data Base Task Group report. To profit from the program, attendees should have actual programming experience in a high-level language, preferably Cobol, and some “exposure” to at least one data base management system.

Professional Development
Part of ACM’s Professional Development series, the seminar is designed to show how to progress from present day conventional DP practices to an integrated system based on the features cited in the Data Base Task Group report. A single major system will be analyzed in depth, according to Dr. Edgar H. Sibley, chairman of Codasyl’s Systems Committee. Sibley will share the podium with Dr. T. William Ollie, who served on the Data Base Task Group and was chairman of the Systems Committee during the preparation of the reports on data base management systems. Other guest lecturers will participate in selected portions of the seminar, Sibley said.

The session will be repeated in Albuquerque, N.M., June 1 and 2, in San Francisco, June 5 and 6, and in New York City June 12 and 13, he noted. Ollie will also be the instructor in another two-day ACM seminar on Data Base Management Systems—Features Analysis, scheduled for Washington May 22 and 23, in Dallas May 25 and 26, and in Montreal June 8-9.

This seminar will provide a survey of the features and capabilities of data base management systems both as a class of software and in terms of 10 systems in particular. It will be based on Codasyl’s features analysis report released in May 1971.

The schedule of other Professional Development seminars is available from ACM, 1133 Avenue of the Americas, New York, N.Y. 10036.

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Better Training for Handicapped Studied

MILWAUKEE — A computer-assisted research project seeking better methods of rehabilitating handicapped persons has been underway at Goodwill Industries of Wisconsin, Inc.

Goodwill Industries' research is part of a computer-assisted study seeking better means of rehabilitating handicapped persons. The research project is entering its second year.

Goodwill Industries of Wisconsin trains handicapped persons in more than 50 trades and crafts, preparing them for work in outside businesses. Since beginning the training in 1919, more than 15,000 persons have been placed in jobs. All of Goodwill's computer operators are handicapped persons.

Initially, Goodwill is compiling a data base on the handicapped, or "clients," coming into the program for assistance. This information includes individual characteristics as well as information on all counseling, functional training and other services that a person receives.

"Ultimately," said Lorenz, "we will be able to develop a statistical analysis that tells us that a person with a certain type and amount of counseling, training and other services, is likely to advance to a certain level of rehabilitation progress."

The information gathered during the research project is entered on punched cards as the client completes a counseling or training session. The IBM System 3 Model 10 correlates this information, which, for a single individual, can amount to hundreds of separate items.

"The information should help us develop a person to his highest level, physically, psychologically, socially and vocationally," said James R. Lorenz, associate executive director for human resource management at Goodwill.

"This information should help us in assisting that person in obtaining a work level truly commensurate with his abilities. We expect people to become better qualified for positions in industry and business, bringing themselves and their employer more satisfaction," said Lorenz.

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If you're at the end of your rope with a throughput-bound IBM 1130, here's welcome news: General Automation's 18/30 Disk Monitor System directly replaces the 1130. With increased throughput, faster memory, 4th generation hardware, expandability, even real-time and communications capabilities. All this for less than you're paying for your 1130. It's a true price/performance bargain.

GA's 18/30 DMS operates directly with programs written for 1130 DM2. So all of your existing software and programming effort is left intact. Future programs are probably already waiting for you in our extensive library. And you'll probably get at least five times the throughput you are currently getting on your 1130. What's more, you'll be able to choose from our line of faster peripherals — like mag tapes, big disks, card readers, line printers and plotters. It all adds up to a system designed to suit your needs for years to come.

The 18/30's role as a superior, economical replacement for the 1130 is a field-proven fact. A General Automation representative will be glad to show you why dozens of customers have already switched to the 18/30 DMS, and what it can do for you. To find out, give him a call. We maintain offices with complete field service and technical support in principal cities in the United States and Europe. And we're growing by leaps and bounds.

For more information on the 18/30 Disk Monitor System, write us today. We'll also send you your very own length of rope and more than 500 physically and mentally handicapped persons working at its rehabilitation center.

"We believe the information the computer gives us will help us develop a person to his highest level, physically, psychologically, socially and vocationally," said James R. Lorenz, associate executive director for human resource management at Goodwill.

"This information should help us in assisting that person in obtaining a work level truly commensurate with his abilities. We expect people to become even better qualified for positions in industry and business, bringing themselves and their employer more satisfaction," said Lorenz.

**Milwaukee** - A computer-assisted research project seeking better methods of rehabilitating handicapped persons has been underway at Goodwill Industries of Wisconsin, Inc.

Goodwill Industries trains handicapped persons in more than 50 trades and crafts, preparing them for work in outside businesses. Since beginning the training in 1919, more than 15,000 persons have been placed in jobs. All of Goodwill's computer operators are handicapped persons.

Initially, Goodwill is compiling a data base on the handicapped, or "clients," coming into the program for assistance. This information includes individual characteristics as well as information on all counseling, functional training and other services that a person receives.

"Ultimately," said Lorenz, "we will be able to develop a statistical analysis that tells us that a person with a certain type and amount of counseling, training and other services, is likely to advance to a certain level of rehabilitation progress."

The information gathered during the research project is entered on punched cards as the client completes a counseling or training session. The IBM System 3 Model 10 correlates this information, which, for a single individual, can amount to hundreds of separate items.
ACM Dues Hike Pending

NEW YORK — A dues increase is in store for the 27,000 members of the Association for Computing Machinery (ACM) because of decreasing computer industry support, according to the outgoing president, Walter M. Carlson.

In his third and final "unfinished business" editorial in ACM's monthly Communications, Carlson commented on the "swiping changes within all segments of American industry" over the last five years.

These changes in attitude toward technical societies have taken the form of reduced financial, moral and technical support, Carlson said in the May issue.

'Crucial Factor'

In the case of ACM, the reduced support "has been a crucial factor in our financial management," he said.

Four years ago, ACM dues were increased from $18 to $25, and industrial support, "in terms of advertising, exhibits at joint computer conferences and institutional memberships," amounted to $15.80 per ACM professional member, Carlson related.

This year, "we estimate that industrial support to ACM will be less than $3.50 per member," he predicted.

ACM, like the IEEE Computer Society and Simulation Councils, Inc., was a founding society of the American Federation of Information Processing Societies (Afips), which sponsors the joint computer conferences.

As "founding" societies, the three share in the profits of the JCCs, and therefore have strong interests in the financial status of those semiannual conferences.

Carlson's editorial memo continued to note that the drop in support, "coupled to the 25% inflation (reflecting in consumer prices) since 1967," has "forced us to our knees financially," and ACM "must now face the step already taken by so many of our sister societies — a dues increase."

Canadian Conference to Feature Four 'Streams' of Discussion

MONTREAL — A four-pronged approach to solving computer problems has been taken by the Canadian Information Processing Society (Cips), in planning the 1972 Canadian Computer Conference here, June 1-3.

The technical program has been broken into four "streams" of concurrent panel discussions and presentations: management; arts; humanities and education; software; and hardware.

R.C. Scrivener, president of Bell Canada Ltd., will deliver the keynote address. Conference chairman Colin Campbell said Scrivener's speech would present the views of "a major user and supplier" of computer services, and would discuss the development of EDP resources in Canada.

'American Challenge'

In a closing-day luncheon speech, Robert L. Perry, managing editor of the Financial Post will discuss how Canadians are responding in various business fields, including EDP, to "the American Challenge."

The conference, at the Queen Elizabeth Hotel, is expected to be attended by about 1,000 registrants, the same as last year's conference in Toronto, Cips officials said.

The conference also overlaps, on one day, the schedule of the Canadian Computer Show, an exhibition at Place Bonaventure, May 30-June 1.

Societies/ User Groups

About 60 exhibitors will be showing peripherals, software, services and time-sharing capabilities, officials said.

The "management stream" of sessions will be opened with a five-nation survey of DP developments in Canada, France, Britain, Japan and the U.S. Speakers will review the profession in each country, and government policy and present typical applications.

Registration for the full technical program, including two receptions, two luncheons and one dinner, is $85. Student rates are $25, or $10 per day. Information is available from the Conference Committee, Box 1772, Station B., Montreal 110, Quebec.

Australian Show Set

BRISBANE, Australia — Sir Macfarlane Burnet, 1960 Nobel Prize winner for medicine, will be featured speaker at the Fifth Australian Computer Conference here May 22.

Burnet is Guest Professor of Microbiology at Melbourne University, and his speech is entitled "The Speed of Change: The Quandry of a Human Biologist."

Speakers will travel from Japan, England, Canada and the U.S. for the conference, which ends May 26.

The conference is sponsored by the Australian Computer Society, Inc., Box 1235 GPO, Brisbane, 4001.

Calendar

June 6-8, Park City, Utah — Mid-year session on "The Real World of OCR," sponsored by the OCR User Association, 9415 South Western Ave., Chicago, Ill. 60620.


June 12-14, New York — Third International Congress on Advances in Automated Analysis. Contact: Department R34, Technicon Instruments Corp., Tarrytown, N.Y. 10591.

June 14-16, Atlanta — Fifth Annual Conference of the College and University 1130 User's Group (Cuetug). Contact: James C. McDonald, Director, Cuetug, Jacobson Computer Center, Morningside College, Sioux City, Iowa 51106.


On behalf of the computer users of the country, Computerworld is taking this opportunity to thank the people responsible for the success of the Computer Caravan.

In each of nine cities, local users participated in a Computer Caravan and exposition, which was opened by a keynote speaker of national stature.

Pictured above are the three speakers, and in the surrounding areas were the panelists and workshop leaders, who donated their time and effort for the success of this project. The names are "tautulated" according to the region in which they contributed.

Computerworld also thanks General Computer Systems, of the Naval Supply Systems Command, for serving as back-up Data Entry speaker for Lawrence Feidelman in Washington, D.C., and Chicago.

While the Computer Caravan was coordinated by Computerworld it is truly the computer user who benefited, and the computer user who saying "Thank You."
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And more. Group/3 has a toll-free number that allows its members to get immediate answers to questions without charge. There is a product evaluation service. There is software developed by Group/3 for specific applications. There are product discounts for members. There are package exchange programs and application handbooks. And the Group/3 staff of System/3 professionals maintains its own System/3 data center for continuing research and development.

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County-Level DP Always Multifaceted Experience

By Molly Upton

PIITTSBURGH - Data processing at the county level has already netted Allegheny County over $1 million, and Thomas R. Jordan, director of the county bureau of systems and computer services, has anticipated yearly savings, since the system is constantly growing.

Through auditing personal property tax returns by comparing Internal Revenue Service tapes with those containing state property tax filings, the bureau uncovered about $750,000 owed in delinquent taxes on 15,500 accounts. Jordan estimates this process will generate about $300,000 each year in similar accounts.

The voter registration system, which is also handled on the 360/40, generated one-time savings of $300,000, and, he noted, the department employs 40 fewer people now than a year ago, through attrition.

Criminal Justice System

A criminal justice system traces the processing of criminal data through the courts to the police. Savings of about $225,000 are ensured with manual systems.

In September, a terminal will be installed at the Criminal Division Clerk of Courts. The system is part of the Law Enforcement Assistance Administration network.

Purchasing has been tied into appropriation accounting, providing overall monitoring of procedures, from writing purchase orders and capturing vendor information, to applying the transaction to the appropriate account.

The system is also linked to the county hospital. "Where we really scored was the ability to produce an actual per patient cost for third parties, such as Blue Cross-Blue Shield and the federal and state governments," Jordan said. "It's generated quite a bit of third-party recipient money coming in."

The property tax files have been converted, and billing will be put on the computer. The clerical work in the assessor's department is currently being automated.

Jordan cited as an asset the lack of any previous system. "We weren't tied down with previous system development. It was all done manually or by EAM before. We started with bare facts and didn't have to undo something somebody else had been building over the last 20 years and gotten themselves fouled up in," he said.

The system's capabilities have generated much interest from municipalities that the center is looking into the feasibility of performing tax billing on a service basis.

The assessment values of property are set by the county, and "we would apply their local millage, for school districts and municipalities, to our assessment. It's a mere matter of applying their millage to the system and producing the tax desk," Jordan said.

3-Dimensional Studies Are for the Birds

FAYETTEVILLE, Ark. - "Biologists are a long way from understanding the complexities of natural communities. But, by using a computer and a visual display device, I am trying to make multiple simultaneous comparisons of relationships among birds in an attempt to view the complexities in a new and meaningful way."

That is how Dr. Frances C. James of the University of Arkansas Museum describes the research she is pursuing with the help of the university's computer and a CRT terminal.

"I am comparing bird populations in two tropical forests and two shrubland areas," she said. "Using data from field observations in West Africa and Panama, I am finding that three-dimensional descriptions of the widely separated areas disclose some highly useful relationships."

"It is possible by projecting three-dimensional drawings on the CRT terminal to view the relative positions of all of the bird flocks together in a tropical forest. Birds that fulfill the same ecological role will fall in the same position on the plot regardless of their ancestry or geographic distribution."

Dispersed Stations 'Center' Data

KANSAS CITY, Mo. - To achieve benefits of source data capture, the University of Kansas Medical Center is making novel use of a key-to-disk data entry system. Three of the system's eight key-stations are installed at remote locations away from the DP room to handle hospital admissions, dietary and general accounting and research accounting functions. The remaining five stations perform routine data entry in the central area.

Whether assigned to remote or central locations, operators at each key-station independently enter data by cable directly into a shared processing and control unit. Data is stored in a disk, automatically pooled and verified before being transferred periodically onto magnetic tape.

Dispersed key-stations simplify data entry by eliminating one step in the process. Data formerly had to be transferred from a manually originated document preparatory to keypunching, then actually keypunched onto cards, now the data is keyed directly into the Inforex system from the original document.

The amount and type of knowledge for efficient management also came into consideration in deciding whether to disperse key-stations at the Center.

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**Computer 'Averages' Hearing Responses**

MELBOURNE, Australia — As part of its research into nose, ear and throat diseases, the Department of Otolaryngology of the University of Melbourne is using a computer in an experiment to determine objectively the hearing range of uncooperative patients such as children.

Although a patient in a soundproofed room may be absorbed in reading or other activity, the brain's response to different tones fed into his earphones can be measured by a series of external electrodes on the skull and then "averaged" for immediate video display on the computer.

**Toxicology Data Base Network Expanded**

The Toxicon network already has entry points in nearly 40 U.S. cities.

**Aussies Want Licensing, Control of All Data Banks**

CANBERRA, Australia — Federal action is needed to control the spread of data banks, according to the attorney general's office.

A New South Wales member of State Parliament, Peter Coleman, also agreed there was a need to regulate or control the activities of persons who amassed private data about the private lives of others.

Coleman called for the registration, licensing and control of all data banks operated by public authorities, credit bureaus, private detective agencies and persons who offered such data bank information for sale.

Inquiries revealed a man had been blacklisted on credit lists because he had never had a credit account and there was no information available on his credit rating.
University Expands Control Programs

On-Line Systems Flourish Under Teleprocessing

By William E. Walden

May 17, 1972

PULLMAN, Wash. — Data processing people in a university environment today are constantly finding ways to keep a computer busy as they are with how to use available computer facilities to handle the growing demand for services.

At Washington State University, a computerized program designed primarily for commercial applications has been put into effect, and is successfully controlling the university's growing number of on-line information systems.

The result is that many separate teleprocessing systems can run concurrently on one computer, with a minimum requirement for core storage of the library.

Called Customer Information Control System (Cics), the system functions as an interface program between user-written application programs and OS/360. Under Cics, separate on-line programs do not require their own teleprocessing systems, and a smaller amount of dedicated core storage is needed for each program.

The on-line systems presently running under the Cics teleprocessing monitor include an extensive library book acquisition system, an automated student record, student account, a computer-assisted instruction program, a text-editing terminal system and an abstract retrieval system used jointly by WSU's plant pathology department and the U.S. Forest Service.

Library Acquisitions

The library book acquisition system is the heart of the university library's technical services operation. At present, the system is concerned only with the ordering of books; however, plans are in progress to expand the system to produce catalog cards and book labels, and to handle other technical service jobs.

Currently, the acquisition system is just one segment of an overall system design that will eventually encompass all technical and patron services of the library.

Entry of book orders to the computer is made through ten IBM 1050 terminals. From the purchase request form, operators input all pertinent ordering data, including title of the book, author, publisher, estimated price, purchase order number, name of vendor and departmental budget code.

The computer collects and stores this order data during the day, and during the night batch processing cycle produces the purchase orders in vendor number sequence.

As a byproduct of the order entry process, the computer also produces punched cards which become book ID cards. These cards are filed until the books are received, whereupon they are pulled and become input to the computer to record the receipt. They are eventually placed into a pocket in the book and are used thereafter in conjunction with the library's system of IBM 357 card-deck reader terminals for circulation control.

When the invoice for a book is received and verified as correct, a 1050 operator in the acquisitions department inputs the invoice number, amount, postage, handling costs, tax, and any other pertinent data which the computer uses to produce a monthly receiving report, authorizing payment of the items listed.

At the same time, the computer produces a set of punched cards which go to the university controller along with the receiving report. These cards are used by the controller as input to the computer for periodic batch production of the checks to the vendors.

Each day the computer makes use of its stored order and receipts data to produce a printed report that lists, by title, all of the orders placed the previous day and all books received that day.

The acquisitions department also has the capability for on-line inquiry of readers, which can be set up to answer any question. The system is aimed primarily at providing scientists at 19 research centers throughout Washington, as well as WSU's plant pathologists, with on-line access to articles that have been published in various journals on the subject of blister rust and other plant pathology matters.

The researchers retrieve abstracts that are appropriate to their needs by inputting simple expressions using Boolean logic. For example, a typical input expression might be: "susceptible," "white pine" and "blister rust.

The computer would then pull out and separately list the titles of all abstracts which refer in any way to all of the words "susceptible," "white pine" and "blister rust.

W.E. Walden is director of the computing center at Washington State University.
Dissemination of Computer-Based Education Programs Under Study

PORTLAND, Ore. — Oregon State University will participate in a national study to find ways to more effectively disseminate computer-based curriculum materials developed for use in higher education.

Dr. Larry Hunter, director of the computer center, will head the study at OSU. Other participants are Dartmouth College, the University of Iowa, North Carolina Educational Computing Service and the University of Texas.

The two-year, $1 million study, supported by the National Science Foundation, has been funded for the first year. OSU's share will be $162,000.

The OSU faculty, with support from NSF, has done research in developing educational programs utilizing the computer. Major work has been in statistics, physics and mathematics. A current program seeks to use computer graphics to make more effectively teach undergraduate science courses.

The computer center is the heart of

Irma Gets the Goods

SAN FRANCISCO — Irma has taken on another task for the air traveller. She now searches for lost luggage throughout the Hughes Airwest system.

Irma (Instant Reservations Made Accurately) is a high-speed computer used by Hughes. Last year, the airline handled more than 4.7 million pieces of luggage, said Arch Miller, director of reservations and passenger systems for the company. "Errors occasionally occur. They amount to a fraction of 1%.

Irma takes information from the passenger and information from the station agent, puts it together and comes up with the location and routing of the lost bag. Irma can identify 99 different bag types and every different bag color.

Star Gazing

Mauna Kea Observatory, the world's highest, is situated atop an inactive volcano on the island of Hawaii. Its location near the equator and its altitude of 13,796 ft make for near-perfect viewing conditions.

The main telescope is directed by a computer that moves the scope into a particular viewing position, then keeps it locked onto a specific star.

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CI Notes

Exports Continue Up

WASHINGTON, D.C. — U.S. exports of computer equipment topped the $119.8 million mark in February, bringing the value of exports for the year up to $300.2 million, a Commerce Department official said.

Western Europe continued to be the largest market for equipment, receiving computer shipments valued at $170 million so far this year.

Unicon Accepted at Nasa/Ames

PALO ALTO, Calif. — Precision Instrument Co.'s Unicon laser mass memory has been installed and will be in operation at the Nasa/Ames facility.

Unicon has been granted options for three additional systems to be ordered within the next 15 months.

'First' 768K 360/50 Reported

STAMFORD, Conn. — Computer In- vestors Group, Inc., exclusive market ing organization for Data Recall Corp., increased the mainframe memory capacity of a major automobile manu facturer's 360/50 computer to 768K with Data Recall memory.

This memory system also features expandability to 1,024K and contains an off-line switch which disconnects the memory from the CPU, permitting maintenance without closing down the entire computing system, the firm said.

Supershorts

Donald R. Cruz, director of ex hibits for the last ten joint computer conferences, has left his Alips post to form David Rogers Corp., an interna tional show management firm.

Booth Credit Corp. has agreed to purchase over the next 15 months up to $5.4 million of equipment from Entrex, Inc. for lease to Entrex cus tomers.

Antek, Inc. has formed a nation wide sales representative organization to market products designed and manufactured by its Data Comp Division.

Four-Phase Systems shipped a record number of computer terminal systems in March, just one year after delivery of the company's first system.

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Univac Set To Keep RCA Series 70

BLUE BELL, Pa. — Univac's Series 70 Operations is making a determined effort to retain the major portion of the $1 billion general-purpose computer base acquired from RCA by Sperry Rand under the Dec. 17, 1971, purchase agreement, according to John C. Butler, vice-president of Series 70 Operations.

Stakes are millions of dollars a month in revenue currently generated by the customer base, he said.

About 400 software support personnel at the 177,000-sq-ft Series 70 systems programming facility in Cinnaminson, N.J., maintain and enhance software in the field. Enhancements include the VMOS (TSOS) operating system for virtual memory users, and the TDOS and DOS systems for real memory users.

They are also developing the software for future conversions to other Univac equipment, such as the Univac 9700 or 1100 Series.

The Cinnaminson facility includes two Series 70/7s, a 70/46, a 70/45-II, a 70/61 and a 70/3. Also at this location is the Series 70 systems support office with a main spare parts center for Series 70 operations containing 25,000 items.

28 customer engineers ready for emergency consultation.

Series 70 Operations also include about 1,300 customer engineers acquired from RCA along with a complete customer engineering education center in Cherry Hill, N.J. The center includes a completely equipped professional television studio which produces video instructional tapes.

The series 70 "parts central" activity, which can provide any of 25,000 spare parts to any location within four hours, is also at Cherry Hill, along with a complete parts repair and equipment refurbishment facility, according to Butler.

The Federal Government, state and local government, utilities, and manufacturing users are the largest Series 70 customer groups.

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COMPUTERWORLD THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
Five Times 3300-Density Seen With New Magnetic Arts Unit

ESCONDIDO, Calif. — An advanced magnetic transducer capable of recording 1,000 track/in. has been developed by Magnetic Arts Corp.

Intended for use with most disk heads and helical scan tape systems, the device is a specialized version of the company’s 4340 core.

The 4340 comes in a standard thickness of 2.1 mil allowing 400 track/in. recording, twice that of the IBM 3320. The 1,000 track/in. version has been processed so that its track is less than 1 mil, five times that of the 3330.

The 4340 is adaptable to most disk heads now in use, the company said. A spacer allows two cores to be mounted in a single housing slot to achieve double-track densities without basic hardware changes. Gap lengths from 10 to 150 mic.

are available; standard tracks are 2.1, 3.4 and 4.3 mil. A single ferrite permits optimum performance from 1 to 15 MHz, the company said.

The 4340 core in initial quantities is priced at $2.65, dropping to below $1 in volume from the firm at 1310 Industrial Ave.

Decision Card Unit Out
HORSHAM, Pa. — A high-performance, fully buffered card reader and printing punch with dual input hoppers, common card path and six output stackers is being offered by Decision Data Computer Corp. to OEMs as a 96-col/O device.

The inclusion of the 9650 in a computer system would enable it to perform such card-handling functions as 1,000 card/ min reading, 120 to 420 card/min punching and printing, collating, reproducing, interpreting, sorting and gangpunching through a single unit, the company said.

The performance, characteristics and cost of the the 9650 compare favorably with the 80- and 96-col MFCUs (Multi-Function Card Units) available from IBM, the company claimed. The 9650 costs $11,600 with a delivery schedule of six months from 100 Witmer Road 19044.

Other New Products
Automata Corp., Bellevue, Wash., has unveiled the low-cost Model 1600 manual, motorized optical mark reader, and the Model 3800 card reader that scans both sides of a card as it passes the read station.

Sequential Instruments, Inc., Elmsford, N.Y., has introduced the Opti-Sensor Series OS-700 and OS-1250 of optical pickups that can replace magnetic pick-ups.

Three products from Monsanto Commercial Products Co., Cupertino, Calif., include a 7-segment light-emitting diode display with a 0.6-in. height in two fonts, the MANG and MAN66; the MCT2F phototransistor opto-isolator which is said to produce twice the gain/bandwidth product of any unit on the market, and the MANH0, a 7-segment alphanumeric display for high-ambient-light conditions, which uses a Gallium Arsenide Phosphide material.

The logic pen from Advanced Digital Research Corp., Mountain View, Calif., is a $125 test tool designed to replace oscilloscopes for troubleshooting problems in digital equipment.

Cycon, Inc., Sunnyvale, Calif., has introduced a 3-1/2 digit BCD analog-to-digital converter module which is said to utilize novel circuit design.

Model 030 array processors for PDP-11 and Nova minis from Unicom, Inc., Northbridge, Calif., are intended for signal analysis systems.

A new series of fast logic modules developed for the National Accelerator Laboratory by LeCroy Research Systems Corp., W. Nyack, N.Y., the LRS 364 and 365 Dual 4-Fold Majority Logic Units feature 150 Mhz operation in compact instrument design.

A MOS-encoded keyboard featuring "N" key rollover and a single 40-pin ceramic MOS chip for random-pair coding of up to 64 keys, is available from Controls Research Corp., Santa Ana, Calif., for general applications on computer communications and data entry terminals.

Tycom Systems Corp., Pompton Lakes, N.J., has announced a universal ASCII interface that permits the Tycom 35/37 Selectric-based typewriter to operate on Model 306
132 columns at 300 lpm
72 columns at 600 lpm

64 characters
8 channel V.F.U.
3" to 19" paper width
Single line memory

Decision Card Reader
the external I/O bus of many minis.

Featuring a read or write cycle time of 150 usec, the Monostore II Bipolar RAM products from Monolithic Systems Corp., Englewood, Colo., are supplied in capacities of 356 to 16K words with bit lengths from 1 to 96.

A 16-bit MOS ROM using P-Channel technology, the EA4800 from Electronic Arrays, Mountain View, Calif., is organized in 2K by 8 bits or 4K by 4 bits and features a 1.2 μsec maximum access time and a maximum power dissipation of .023 mW/bit. Prices of 100 quantity are 

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Computer Automation Memory Modules
$52.50 for the silicone package and $60 for the ceramic.

A monolithic integrated circuit chip, containing the complete digital portion of circuitry required for an 8-bit successive approximation A/D converter system, has been announced by Harris Semiconduc-
tor, Melbourne, Fla.

Applied Magnetics Corp., Goleta Calif., has announced the portable E-200 Disc Memory Exerciser with facilities for full on-site testing of the key parameters of the AMC M-200D Series Disc Memory Systems.
Coming in the June 28 issue of Computerworld is a special supplement on Software and Measurement

In this supplement, our editors will examine the current state of the software field, including:

- Improving CPU productivity through efficiency measurement packages.
- Time sharing packages.
- DOS enhancement from independent suppliers.
- New software support to RCA's Spectra users.
- Improvements and new packages for small systems.
- Application and machine packages.

This supplement is must reading for computer users and must advertising for software marketers.

Closing is June 9. Contact your Computerworld representative soon, as ad space is limited. For details, call Dottie Travis or Dawn Silva at: Computerworld (617) 332-5606

Applications-Oriented Systems Should Push Voice Response Market Growth

PENNSAUKEN, N.J. – The audio response equipment market will show rapid growth from a very small base of installations, according to a study by Alltech Computer Systems Inc.

At the end of 1971 the installed base of voice response systems was estimated at 650 units, the study says, and it predicts that the installed base will grow to a level of 3,000 units by the end of 1976 with most of the growth coming in the 1975-76 time period.

The "key to the growth of the voice response industry will be the introduction of more applications-oriented systems encompassing voice response techniques, CRT displays and hard-copy capability," the firm said.

IBM dominates the voice response market, according to the report, even though there are more than 40 companies presently supplying equipment. The most widely accepted product in the market is the IBM 7770 unit, it adds.

CMC Takes Over Transamerica's Keylogic Base

LOS ANGELES – Computer Machinery Co. has completed its arrangement with Transamerica Computer Co. under which it has taken over the installed base of Redcon Keylogic systems owned by Transamerica (CW, April 19).

Under the deal, Transamerica will buy approximately $12 million of CMC equipment with a monthly rental of around $295,000.

CMC will receive about 50 Keylogic systems generating rental revenue of around $140,000/mo. In addition, Transamerica will pay $7 million in cash to CMC. Transamerica purchased the Keylogic equipment in 1971 from Redcor.

The majority of systems in use today are within the banking industry, primarily for account status. Other systems are used for credit verification and telephone company applications with customer order entry and inventory control applications becoming increasingly important.

The growth of the industry over the next two to three years is expected to start at an estimated 20% in 1972, and grow at an estimated 10%/yr thereafter, without the impetus of a large independent company, and none is currently foreseeable, the firm says.

This will result in an installed base of around 1,520 units by the end of 1974, it adds. However, by 1975 the industry is expected to enter its growth phase.

At that time there will be a broad base of communications capability both in the installed base of computer systems and in the available transmission techniques; widespread availability of necessary telephone equipment; and a widespread demand for these techniques from users, the report states.

"This growth period can be expected to be rapid and immense, requiring large amounts of resources," Alltech feels.

"Because of the large potential use for voice response techniques, this growth period can be expected to last until 1985, and beyond, as voice input techniques are merged with voice response systems.

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Age of Dedicated Minis Predicted

By Edward J. Bride

NEW YORK — The trouble with the software industry today is that "it's difficult to find a company that can write difficult software," observed Charles P. Lecht, president of Advanced Computer Techniques Corp. (ACT).

ACT is a software and management consulting house here specializing in compilers and operating systems.

Lecht is a strong believer in minicomputer technology, and apparently believes the predictions that applications programmers will continue to decrease in numbers. By the end of this decade, large-system research and development may be "by order only," and consumer-type research will be concentrated on small systems, he commented.

"I am a firm believer in programming a small system once, then using it for one, dedicated application," he noted.

Lecht foresees the day when large corporations will have small systems for each department, with one central minicomputer for data base management.

In the nearer term, large systems may satisfy the needs of companies with centralized management and administration, he conceded. His company was chosen (with GE) by the Port of New York Authority to develop the computer capabilities of the World Trade Center (WTC).

The project includes establishment of "interfile," a data base pertaining to international commerce and trade, and intended to facilitate international business for WTC tenants.

Tenants of the huge complex can install terminals to two GE time-sharing systems (Resource and Time-Sharing), or use the WTC Information Center as a service bureau, and access either of these systems in the same manner.

"Symbiotic Union"

Lecht stated that people cannot deal with computers unless they look on them in "symbiotic union" with their human counterparts.

"Taking away his philosophy that "human protoplasmic flesh" is part of a computer system, the practical fact is left: managers cannot improve their own hardware efficiency without looking at the computer's relationship with operators and programmers," he said.

He has also suggested that users about to experience the decomposition of DOS may have a legal case against the vendor, if their request for proposal included continued support of their operating software.

Orders and Installations

Two hospitals and a clinic have installed NCR Century systems to handle financial transactions. Northwest Texas Hospital is using a 200, High Plains Baptist Hospital, Amarillo, Texas, has a 50 and the Nalle Clinic, Charlotte, N.C., uses a 100.

Pansophic Systems Inc.'s Panvalet Direct Access Library System has been installed at GTE Data Services Inc. The system will be used to standardize data library activities.

Computer Micro Services, Chicago, has ordered Pertec Corp. computer output microfilm systems for installation in service bureaus in Chicago, Detroit, Indianapolis, Milwaukee and St. Louis.

Three colleges have ordered or installed Unix systems for academic and administrative use. Mercer University, Macon, Ga., has ordered a 9200. The Community College of San Antonio, Texas, has installed a 9211B, and Lehigh County (Pa.) Community College has a 9511.

Modular Computer Systems has delivered its Modcomp Basic software to the U.S. Army Electronic Command, Ft. Monmouth, N.J.

Data Technology Inc. has ordered Control Data Corp. 953/SC1700 and 915/8092 page reading systems to provide optical character recognition services.

Applied Data Research Inc. has installed a computerized reservation system for Amtrak, the national railroad passenger corporation.

Datacenter Corp. has received orders for four Series 6000 computers and peripheral equipment from: Wright Patterson Air Force Base; D.E. Brit. Assoc., the University of Wisconsin Medical Science facility; and Kitt Peak National Observatory, Tucson, Ariz.

Brunswick Corp. has ordered a communications-message-switching system from EMR Computer. The main element is an EMR 6135.

If You Will Write A Lease In The Near Future, We Can Make You An Offer That Cannot Be Equalled.
In the acquisition of Ancom Systems by Boothe Data Systems, the exercise price of Boothe Data Systems common stock purchase warrants has been reduced from $2.50 per share to $1.50 per share. U.S. Financial Systems, which owned 75% of Ancom, now owns about 66.7% of Boothe Data Systems common and 30% convertible preferred.

**Sperry Rand’s Earnings Fall 16% For Year, But Quarter Net Rises**

NEW YORK - Sperry Rand Corp. ended its fourth quarter with a 15% increase in earnings, but noted a 16% decline in earnings for the year ended March 31.

Earnings for the quarter totaled $23.8 million or 69 cents a share, compared with $20.7 million or 60 cents a share in the same 1971 quarter. Sales rose to $549.4 million, a 17.5% increase over $486 million registered in the year-ago period.

For the year, earnings declined to $60.8 million, or $1.77 a share, from $72.3 million, or $2.11 a share in 1971. Sales rose 5% to $1.82 billion from $1.74 billion.

Adoption of the equity method of accounting for investments lost less than 50% owned increased earnings for both the quarter and the year by $5.2 million, or 15 cents a share, the company said.

The year’s earnings were affected by the slower-than-expected recovery in demand for capital equipment, noted Chairman J. Frank Forster.

**New VS-IV Bridges Man-Machine Communications Gap**

**See preview of first low-cost, miniature voice synthesizer at computer conference**

Booth 1622 . . . that’s where you will see . . . and hear . . . one of the more interesting products at the SICC.

The VS-IV Voice Synthesizer, no bigger than a household telephone, accepts digital commands from a variety of sources, including any computer, and converts them into completely understandable audio signals. In effect, it permits a computer to speak in understandable English (or, when programmed for the purpose, any other language).

**Computer Sciences Posts 1972 Losses**

LOS ANGELES - Hit by a change in accounting method, Computer Sciences Corp. (CSC) posted a loss of $41.2 million for the quarter ended March 31 and $75.7 million for the year ended March 31.

Operating revenues for the year reached a record high of $127.6 million, compared with $114 million in 1971. Revenues for the quarter climbed slightly, to $31.1 million from $31 million in the year-ago period.

The decision to charge against earnings as of March 31 all development and start-up expenses for proprietary programs accomplished despite a provision of about 5% at year-end if business conditions continue to improve, Chairman William C. Norris told stockholders.

**$582 Million Deficit**

In the acquisition of Ancom Systems by Boothe Data Systems, the exercise price of Boothe Data Systems common stock purchase warrants has been reduced from $2.50 per share to $1.50 per share. U.S. Financial Systems, which owned 75% of Ancom, now owns about 66.7% of Boothe Data Systems common and 30% convertible preferred.

Control Data may declare a dividend of $1 per share in the second quarter of 1972, compared with $0.75 a share in the same 1971 period.

CSC reported a loss of $37.5 million for the year, after a tax credit of $19.4 million. This compares with last year’s earnings of $29.9 million, or 22 cents a share.

The unit is a miniatuized, solid-state device weighing less than 5 pounds. Essentially, it is an electronic brain for the human voice, receiving commands from the bloodstream and converting these into understandable English.

The cost of the VS-IV Voice Synthesizer is under $2,000 in production quantities, positioning it considerably under conventional audio response devices, and suggests its use in applications where other units are impractical.

The VS-IV speaks your language at Booth 1622. So do we.

**Vocal Interface Equipment Group**

Find Booth 3401 Martin Avenue

**SPREAD PROCESSING with “ON-SITE” PUNCHING of SOURCE DATA**

MODEL 2600-00

Instead of using handwritten source data which must to keypunching before entry, you can punch source data into cards at any remote location using the Wright Punch. These cards can then go directly to data entry.

Find out how this remarkable, inexpensive yet reliable process can help you reduce data flow, reduce keypunching bottleneck and save money. Circle readers service number or write to Electronic Data Processing, Wright Line, A Division of Barry Wright Corporation, 100 Bryant Street, Worcester, Massachusetts 01606.

Other models available (manual and electric) for punching Hollerith type holes into plastic tabulating, credit, ID and check cards. Special versions available. OEM and Dealer inquiries invited.
**Computer Stocks Trading Index**

<table>
<thead>
<tr>
<th>Computer Systems</th>
<th>Software &amp; EDP</th>
<th>Peripherals &amp; Subsystems</th>
<th>Leasing Companies</th>
<th>Suppliers &amp; Accessories</th>
<th>CW Composite Index</th>
</tr>
</thead>
</table>

**Computerworld Stock Trading Summary**

| E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |— |

<table>
<thead>
<tr>
<th>LEADERS PRICES THURSDAY, MAY 11, 1972</th>
</tr>
</thead>
</table>

**Earnings Report**

**DATA TRENDS**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six Months Ended Dec. 31</td>
<td>$1,818,547</td>
<td>$1,794,954</td>
</tr>
<tr>
<td>Six Months Ended May 31</td>
<td>$1,104,299</td>
<td>$230,893</td>
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</tbody>
</table>

**DPA**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Months Ended Feb. 29</td>
<td>$1,513</td>
<td>$885,448</td>
</tr>
<tr>
<td>Six Months Ended May 31</td>
<td>$2,578,518</td>
<td>$1,206,480</td>
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</table>

**COMPUGRAPHIC**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
</tr>
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<tbody>
<tr>
<td>Three Months Ended April 30</td>
<td>$1,520</td>
<td>$932</td>
</tr>
<tr>
<td>Six Months Ended May 31</td>
<td>$6,339,000</td>
<td>$5,136,900</td>
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**PROGRAMS & ANALYSIS**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Months Ended Feb. 29</td>
<td>$2,148,908</td>
<td>$3,970,862</td>
</tr>
<tr>
<td>Six Months Ended May 31</td>
<td>$11,477,172</td>
<td>$2,266,363</td>
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</table>

**NATIONAL COMPUTER SYSTEM**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year End Jan. 29</td>
<td>$13,242</td>
<td>$8,60</td>
</tr>
<tr>
<td>Six Months Ended March 31</td>
<td>$4,288,908</td>
<td>$3,970,862</td>
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<tr>
<td>Six Months Ended May 31</td>
<td>$25,025</td>
<td>$3,970,862</td>
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<tr>
<td>Year End Dec. 31</td>
<td>$35,000</td>
<td>$35,000</td>
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**COMPUTER SERVICES**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
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</thead>
<tbody>
<tr>
<td>Six Months Ended April 2</td>
<td>$1,182,447</td>
<td>$1,182,447</td>
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**HONEYWELL**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eight Months Ended Mar. 31</td>
<td>$24,136,804</td>
<td>$10,718,804</td>
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**DATA DOCUMENTS**

<table>
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<tr>
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<tbody>
<tr>
<td>Six Months Ended May 31</td>
<td>$11,220,000</td>
<td>$2,970,000</td>
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<tr>
<td>Three Months Ended Mar. 31</td>
<td>$35,000</td>
<td>$35,000</td>
</tr>
<tr>
<td>Year End Jan. 29</td>
<td>$4,288,908</td>
<td>$3,970,862</td>
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**ENNIS BUSINESS FORMS**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year End Jan. 29</td>
<td>$2,092,267</td>
<td>$1,376,165</td>
</tr>
<tr>
<td>Six Months Ended May 31</td>
<td>$24,875,480</td>
<td>$2,970,000</td>
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<tr>
<td>Three Months Ended Mar. 31</td>
<td>$35,000</td>
<td>$35,000</td>
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**DI-AN CONTROLS**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
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<td>$35,000</td>
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**ADVANCED COMP TECH**

<table>
<thead>
<tr>
<th>Period</th>
<th>Revenue</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>129-143</td>
<td>$14,185,000</td>
<td>$9,135,000</td>
</tr>
<tr>
<td>143-167</td>
<td>$13,564,428</td>
<td>$12,814,272</td>
</tr>
</tbody>
</table>

**It's time your computer got its hand dirty col fake**
Westinghouse 2550 Satellite Processor

Both an intelligent remote-batch terminal and local-batch processor

As a remote-batch terminal, the Westinghouse 2550 Satellite Processor emulates 2760s, HASP multileaving work stations and other popular RJE terminals. No reprogramming of your host processor or front-end system is required.

In addition to this compatibility, the 2550 Satellite Processor increases performance. It improves terminal throughput with higher speed peripherals, faster data rates, data compression, and mass-memory devices for remote spooling.

Offline, the 2550 Satellite Processor provides fast, low-cost batch processing for your scientific, engineering, and business needs. Software support packages include FORTRAN, BASIC, RPG, and numerous assemblers.

Most important, the Westinghouse 2550 Satellite Processor has enthusiastic user acceptance, and is available now! Take advantage of Westinghouse experience as a supplier and as a user. You get single-source leasing, maintenance, and nationwide sales and service.

For the answer to your needs, call Westinghouse Computer and Instrumentation Division, Computer Department, Orlando, Florida. 305 843-7030.

You can be sure...if it's Westinghouse