ON LINE
DIGITAL EQUIPMENT CORPORATION
July, 1968

# PDP-8 Family Adds 8/L . . .

Following a trend it started eight years ago when it introduced its first computer, Digital has again lowered the cost of full-scale computers with the introduction of the PDP-8/L.

Selling for $8,500, the 8/L is the lowest cost, full-scale, 12-bit computer now available. It follows the PDP-8/S, which was the first general-purpose computer to sell for less than $10,000 when it was introduced last year.

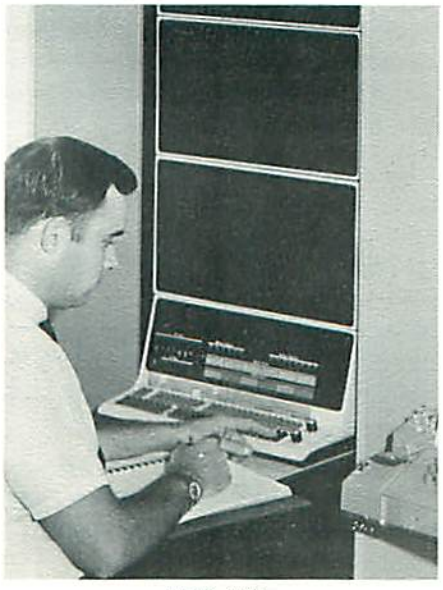
The 8/L is a smaller version of the 8/I and is designed for uses where the full power of a larger system is not needed. It is a 12-bit computer with a 4K basic core memory, expandable to 8K. It accepts software identical to that of the 8/I, including DEC's own conversational language, FOCAL.

Marketing Manager, Bill Landis, notes, "The 8/L is ideally suited to areas where a specifically defined need exists, such as with analytical instruments where present hand-wired devices do not offer the flexibility of the general-purpose computer and where the cost of such a device approaches or exceeds that of a computer.

"We also expect to find a substantial market in education where the low cost 8/L can be used as a free-standing, multi-user teaching device or as on-line terminal to a time-sharing system," he continued.

PDP-8/L

# 9/L Joins PDP-9 Family



PDP-9/L

Yet another low cost computer, the PDP-9/L has been introduced by Digital.

The new 18-bit, $19,000 computer will bridge the gap between the $35,000 PDP-9 and the $12,800 PDP-8/I. It has a basic core memory of 4K words, expandable to 32K.

Commenting on the 9/L, Bob McInnis, PDP-9 Marketing Manager, points to a "multi-million dollar market" where prospects are faced with a steadily increasing work load but cannot justify the immediate acquistion of more than a small computer base from which to grow. The 9/L can provide this base.

He anticipates a substantial market for the expandable 9/L in areas such as university physics and chemistry laboratories, bio-medical research, general data acquisition, and applications requiring the extensive use of data display.

"The 9/L also provides an economical choice for a number of equipment manufacturers who are using small computers in their systems and who now want to offer customers more operating sophistication and flexibility without sacrificing their competitive advantage," added McInnis.

The 9/L was developed by a group headed by Don Vonada. First deliveries are scheduled for October.

# San German Module Plant Opens

Add San German, Puerto Rico, to Digital's growing list of facilities.

San German (pronounced "Sahn Hairmahn") will be a module production plant exclusively, and is now gearing up for production. The first modules are expected to start leaving the plant before the end of July.

The Puerto Rico plant will supplement Digital's module production facilities in Maynard, Massachusetts. Maynard alone has been averaging over 100,000 modules per month, but soaring computer sales and growing module markets require greater production capacity.

At Carleton Place, Canada, module facilities, will be replaced by facilities for power supply, wire-wrap, and computer sub-assembly production.

Printed circuit boards are now being shipped from Maynard in land/sea containers by truck to Patterson, New Jersey; then by sea to Mayaguez, Puerto Rico; and then by truck again to San German. The components will be assembled, and the completed modules returned by air to Maynard for testing.

Eventually, San German will order components directly from manufacturers, will test the modules, and will then send them directly to customers. Maynard will only provide the circuit boards.

Digital is leasing a brand-new 10,000 square-foot plant, built and owned by the Puerto Rican government.

## Economic Miracle in Puerto Rico

San German - the site of Digital's new module plant - is a city of 15,000 inhabitants located at the eastern end of Puerto Rico.

It is approximately 150 miles by road from San Juan, Puerto Rico's major city, and 40 miles from Mayaguez, a port city of 100,000 inhabitants.

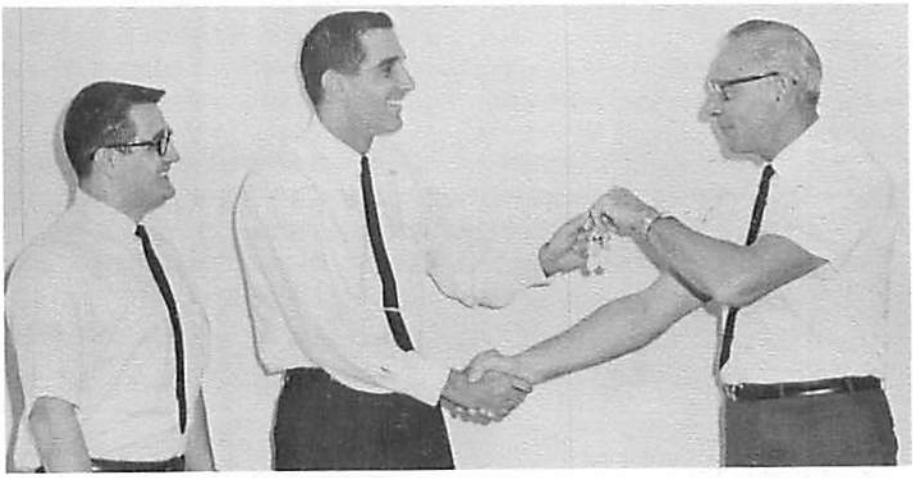
The island of Puerto Rico is only 100 miles long and varies in width from 35 to 60 miles. It is smaller than Massachusetts and, with 1,500,000 inhabitants, is among the most densely-populated areas in the world.

Despite its dense population and lack of natural resources, Puerto Rico provides a dramatic example of democratic economic development.

A remarkable program of industrial development has created thousands of new jobs, the literacy rate has soared to 87%, per capita income has doubled in a decade, and, in less than 10 years, life expectancy has increased by 22%.

If trade is calculated on a per capita basis, Puerto Rico is the United States' best customer. There are only seven countries whose trade with the U.S. exceeds one billion dollars each year. Puerto Rico belongs to this elite group.

## Kendrick, Inesta, Ferra



Vice President Pete Kaufmann, center, hands San German plant keys to Cy Kendrick, who will supervise the start of operations. San German Plant Manager, Raul Inesta, is at right.

The three key individuals in getting San German operations started are Cy Kendrick, Module Assembly Manager in Maynard; Plant Manager Raul Inesta; and Accountant Jaime Ferra.

Cy will spend several months in San German to supervise the installation of equipment and the start of operations.

During his absence from Maynard, Jim Cudmore, Module Test Manager, will temporarily supervise Module Assembly.

Raul joined DEC in May as the first person hired specifically for Puerto Rico. He was born in Mayaguez, Puerto Rico, and is an industrial engineering graduate of the University of Puerto Rico. He comes to DEC from the U. S. Naval Ordnance Plant in Forest Park, Illinois, where he gained considerable experience in plant management.

The distinction of being the second person hired for Puerto Rico goes to Jaime Ferra, an accounting graduate of the University of Puerto Rico. He had been serving as Assistant to the Controller with a Chicago-based firm. Previously, he served as Controller for the Puerto Rican branch of a U.S. company.

In Puerto Rico temporarily to help install equipment and get operations started are Bill Owens, Nason Wilkins, and Steve Spaulding, all from Digital in Maynard.

# Accounting Dept. Changes Made

Several major changes -- designed to provide expanded service and advice in financial matters to all parts of the DEC organization -- will become effective in the Accounting Department on July 15.

Bob Dill, Accounting Manager, will assume responsibility for the cost accounting section in addition to his present duties. Dick Bergeron will head up this section reporting to Bob.

Two financial analysis groups will be formed. One, relating to manufacturing costs, will be headed by Ed Simeone, assisted by John Sanguedolce. The other, headed by Ed Savage, assisted by Clayton Rix and Mike Dowling, will function in the non-manufacturing areas. Both of these groups will be expanded over the next few months.

Ed Simeone's group will devote its entire effort to handling all inquiries concerning costs of goods manufactured or purchased, analyzing cost trends in these areas, participating in the preparation of cost estimates for new or existing products, developing cost analyses for make or buy decisions, analyzing inventories, supervising physical inventories, etc., as well as manufacturing budgeting.

Ed Savage's group will perform similar functions as regarding the product line organizations, the sales and service organization, and the administrative departments.

Bob Dill's organization will be responsible for all day-to-day accounting activities including:

| | |
|---|---|
| Accounts Payable | Alma Pontz |
| Accounts Receivable | Don Summers |
| Payroll | Ted Tibbetts |
| Cost Accounting | Dick Bergeron |
| General Accounting | Reeves Akin |

In announcing the changes, Vice President Harry Mann stated, "Because of the rapid growth of DEC and the constantly changing needs of our managers, more analysis and quicker response is increasingly important.

By relieving key people of direct responsibility for this work, we expect to give operating managers more information suited to their own needs and to assist them more effectively."

# Filtration System Installed

To prevent chemicals from entering the town sanitary system, Digital has installed a $30,000 waste treatment plant in the new circuit board plating area.

Large quantities of acid, alkali, copper etchant, and rinse water are treated in the system. In fact, no wastes leave the area without passing through the treatment tanks.

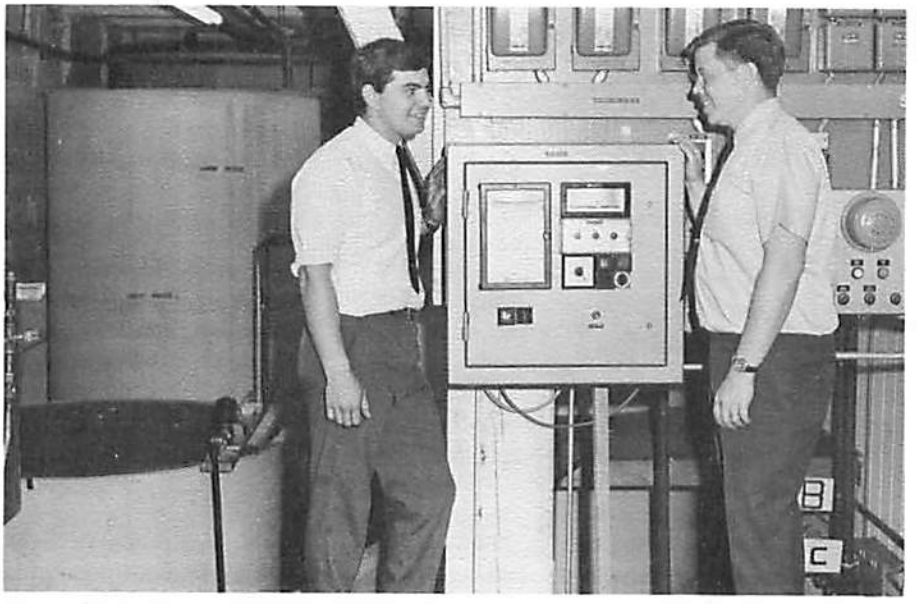
As much as 60 gallons of acids or alkalies are disposed of at a time -- far too much for the town sanitary system to absorb. They are stored in special "holding" tanks and then broken down chemically in another tank.

A huge filter -- 6 feet in diameter and 12 feet high -- allows the retrieval of copper sludge, which is then sold to a processing firm.

The entire system was designed and engineered by Lancy Laboratories, Inc., of Pennsylvania. It was installed under the supervision of Dick Mullarkey, Project Engineer.

The filtration system includes:

- Holding tanks where waste chemicals are stored temporarily.
- Neutralizing tanks where acid and alkalies are added in minute quantities to rinse water and neutralizing chemicals.
- A gas-fired reactor -- 6 feet in diameter and 10 feet high -- to break down copper etchant and remove ammonia.
- A huge filter, to separate the product from the reactor into an easily-disposed-of liquid and a useful copper oxide.
- An automatic electronic monitoring control that checks the system 24 hours per day; records the data every 20 seconds; and activates valves, relays, etc. to maintain control.



Technician, Ron Beaudreau, and Project Engineer, Dick Mullarkey, at the electronic console of Digital's new filtration system.

# London Bus Visits Maynard


Allan Pommer, dressed in an authentic London bus driver's uniform, and his London bus outside Building 12, Maynard.

Would you believe a double-decker bus in Digital's parking lot in Maynard...with New Hampshire license plates, right-handed steering, and a Dublin Airport destination sign?

A lot of people blinked twice and rubbed their eyes, but it wasn't a hallucination. The bus, a genuine London Transport Board vehicle, is owned by Allan Pommer of the Programming Department. He drives it to work occasionally, and recently used it for the Programming Department's annual outing.

"On my first visit to London, I rather fell in love with double-decker buses," he states, "and thought it would be wonderful to bring one back to Boston."

After negotiations with the London Transport Board, he finally purchased double decker number RT82, and it was shipped to the U.S. in 1964. A Boston department store heard about the bus and hired it for two weeks to help promote the sale of British goods. Allan, who managed to get a London bus driver's uniform with the bus, served as driver during the promotion, and Dave Plumer, Digital Programming Department, was the conductor.

The following year, the same store hired the bus again -- this time for an Irish sale. RT82 became a great impostor in a coat of shamrock green, and the destination signs were changed to Dublin routes.

RT82 is -- or was -- 14 feet, 6 inches tall until a Boston politician hired it for his campaign. His driver overestimated the height of a low bridge, and the bus was disastrously reduced in height.

Allan then acquired a low-height double decker from the L.T.B. along with parts to repair RT82. The new bus has been painted green and disguised as a Dubliner, with hopes that it, too, can work off some of its expense.

The two double-deckers are only part of Allan's collection. It also includes two old trolley cars and five old American buses, most of them former property of the Massachusetts Bay Transportation Authority.

He says he wants to preserve a chapter in public transportation. "Unfortunately, many buses are already gone," he points out. "That is why I have acquired these buses."

With several friends, he has formed the Vintage Commercial Vehicle Club to preserve interesting commercial vehicles and to eventually establish a museum in the Boston area.

And what does he expect to acquire next? "I'm not sure at this point," he answers, "but there are some beautiful little taxi cabs scooting around London..."

# Tuition Program Produces Grads

Arthur Madden joined the service before completing high school, so he has taken advantage of the tuition refund program to take the various courses required for a high school diploma.

Glenn Ford, whose new degree is in business administration, has been going to college almost continually--either full-time or part-time--since he graduated from high school in 1960.

First he earned an Associate's Degree in accounting from the New England School of Accounting. Then he spent a year at Cornell University where he took a Food Industry Management course. He has been attending Clark since coming to DEC two years ago.

Dennis O'Connor has been taking advantage of the DEC tuition refund program for five and a half years, and estimates that he has chalked up over 40,000 miles in travel to and from classes.

Several Digital employees received diplomas in June as a result of courses taken through the Digital tuition refund program.

The recipients include--

Joe Gaffney, Personnel, M.ed., Boston College; Arthur Madden, Machine Shop, diploma, Maynard High; Glenn Ford, Field Service, B.S., Clark University; Dennis O'Connor, PDP-9 Engineering, B.S., Northeastern University.

Joe Gaffney's Master's Degree in counselling psychology is the result of approximately five years of evening study. He is a graduate of Seton Hall University and started work on his Master's while serving in the U.S. Army at Fort Devens. He joined DEC in 1965.

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On Line apologizes to Linda Brown, Maynard Module Production, for accidentally omitting her name from a list of Digital's first employees, which was published in last month's edition. Mrs. Brown possesses Badge No. 14.

# Promotions, Transfers, Appointments

Richard Hill has been appointed District Sales Manager in New Haven, Conn. A native of Salt Lake City, Utah, and an electrical engineering graduate of the University of Utah, he joined DEC in 1967. He previously served with Hamilton Standard as a specialist in digital systems.

Irwin Jacobs, formerly District Sales Manager in New Haven, Connecticut, has been appointed District Manager in Cambridge, Massachusetts. He came to DEC in 1965 after serving as a senior engineer with Sylvania. He is a graduate of Worcester Polytechnic Institute.

Frank Nardo, formerly administrative assistant in the PDP-10 group, is now PDP-10 ProductionManager. He is an electrical engineering graduate of MIT, and also earned a B.S. in engineering management from Northeastern University. He joined Digital in 1966. PDP-10 Production is responsible for theconstruction, testing, and shipment of all PDP-10 systems.

Ronald Senatore has joined Digital as Supervisor of Information Services. In this capacity, he is responsible for the handling, storage, and retrieval of engineering records. He had been working with the Ford Motor Company in Dearborn, Michigan.

Roger Cady has been appointed Engineering Manager for the PDP-8 family product line. He will have overall responsibility for the engineering tasks relating to the PDP-8, 8/S, and 8/I. He has been with DEC for six months as Manager of the Computer Test Engineering Group. He is a graduate of Northeastern University, and came to us from Honeywell EDP.

Steve Mikulski is now Manager of PDP-10 Sales Support in PDP-10 Marketing, with responsibility for training of salesmen and direct field support. In his previous position as PDP-10 Production Manager, he helped get the PDP-10 into production and successfully meet shipment goals. He is a graduate of Northeastern University, and has served with DEC for six years.

# R.E.S.I.S.T.O.R. at Digital

Digital personnel who attended the recent Spring Joint Computer Conference in Atlantic City were impressed by a group of high school students -- who literally stole the show.

The manner in which the students managed to get their terminal on line with a computer (PDP-8 at Western Electric, via a pay telephone), while most of the large companies were unable to do so because of the telephone strike, received considerable coverage in the press.

Newspaper headlines read ... "Bow Down Your Heads, RCA, IBM"...and ..."Students Steal Show as Conference Opens." The students belong to a club called the RESISTORS: Radically Emphatic Students Interested in Science, Technology, or Research Studies.

Part of the credit for their success goes to Andy "Slim" Walker, who just graduated from Lincoln-Sudbury Regional High School and is now working at Digital for the summer. "Slim" helped organize the RESISTORS last year when he lived in Princeton, New Jersey. The group set up shop in an old barn -- and then, through artful wheeling, dealing, cajoling, begging and borrowing, crammed it with electronic equipment, including two old, but operable, computers.

Between the computer experience he gained in New Jersey and at Lincoln-Sudbury High School, which has a classroom time-sharing Teletype terminal, and the experience he will gain at Digital, "Slim" may soon qualify as the youngest full-fledged programmer in the United States.

He is now organizing a RESISTORS chapter in this area. If you are interested in helping out, please contact him.

# Training: 11 Classrooms, 20 Instructors

Digital's Training Department enjoys two contradictory distinctions -- for many employees it is one of the least-known departments, but to others it is one of the best-known.

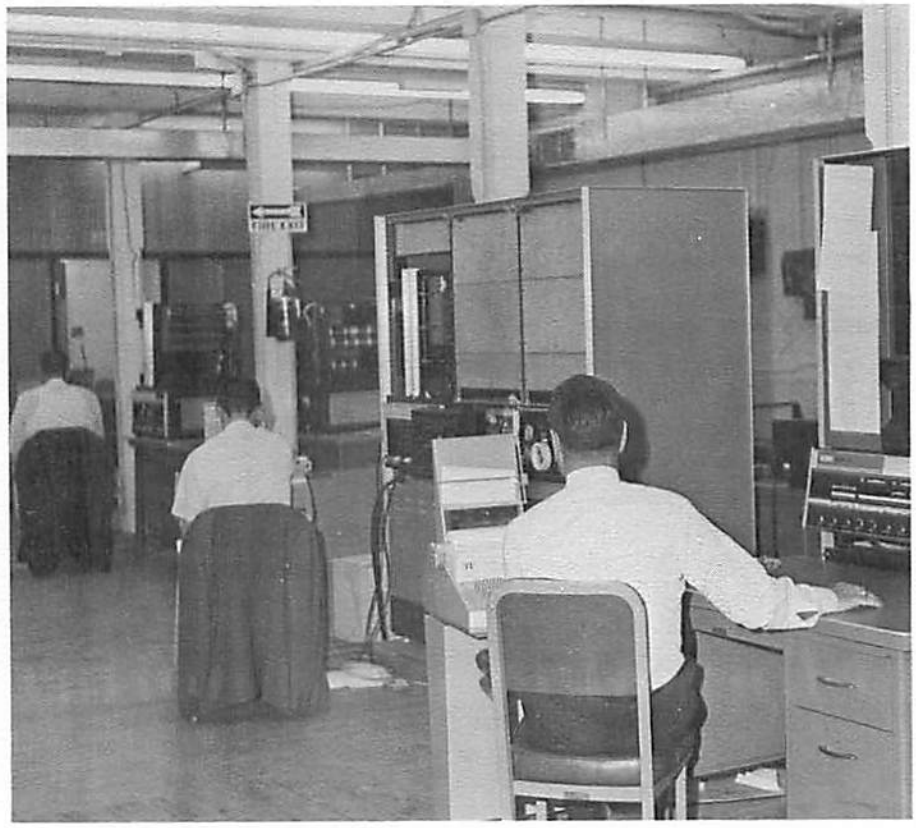
It is one of the least-known to many employees in Maynard because it is tucked away in Building 11, remote from any of the main work areas or main corridors. To many field personnel, it is one of the better-known departments because many of them have completed at least one of its courses.

Probably sooner than most other departments, it feels the impact of DEC's soaring sales--for with every computer sold, DEC offers the customer two free training courses: one in programming, and the other in maintenance. This means a steady flow of customers, and Training is now handling about 50 at one time.

As more and more computers are sold, there is also a constantly-increasing need for trained technicians to service and repair them. In the last six months, Training has processed over 800 field service technicians. Every newly-hired technician takes the seven-week DEC-Tech course to gain a basic knowledge of our computers. Later, he returns for more advanced courses--some last as long as 15 weeks--on specific computers or peripheral equipment.

DEC has fairly extensive training facilities...11 classrooms, 20 instructors, and a well-equipped lab with 15 computers of its own. Reading, England, also has its own training facilities staffed with several instructors. In addition, instructors from Maynard hold training sessions in the field and at customer locations.

Another major program is the Twi-Light Tech course for employees who need training in the basic fundamentals of computer technology. Participation is voluntary, with five two-hour sessions per week for twelve weeks. One hour is on Company time, and one hour on the employee's time. Over 50 employees attended the recently-concluded Twi-Light Tech sessions.



The Training Department's lab is equipped with 15 computers.

Dave Edwards supervises the Employee Training section, and Jim Davis supervises Customer Training activities.

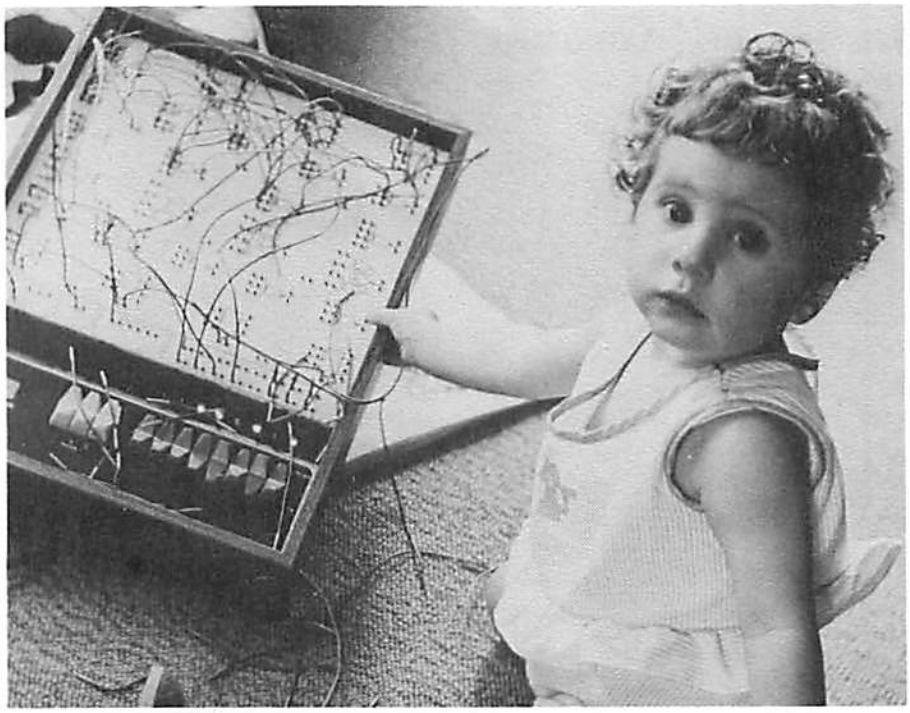
Instructors for the various courses are:

In-House Instructors

| | |
|---|---|
| Ed Hilton | PDP-8/I Maintenance<br>DEC-Tech |
| L. Conklin | PDP-10 Maintenance |
| Larry Rogers | PDP-10 Maintenance |
| Dick Gaudin | PDP-9 Maintenance |
| L. DeAngelo | DEC-Tech |
| John Domeau | PDP-8/I Maintenance<br>Wiremen's Course |
| J. Carvalho | DEC-Tech<br>Twi-Light Tech |
| Bob DiMeo | Linc-8 Maintenance<br>PDP-8 Maintenance<br>ASR33 |
| Rudy Brodsky | PDP-8/I Maintenance |
| Tom O'Dea | PDP-8/S Maintenance<br>DEC-Tech |
| Ken Wormald | Twi-Light Tech |

Customer Instructors

| | |
|---|---|
| Dick Beaven | PDP-10 Programming<br>PDP-8 Programming |
| Tom Mosco | PDP-8 Programming<br>PDP-9 Programming<br>Linc-8 Programming |
| G. Sengstock | PDP-8 Programming<br>PDP-9 Programming |
| Phil Landry | PDP-8/S Maintenance<br>PDP-9 Maintenance<br>Basic Programming |
| T. McMurdo | PDP-9 Maintenance<br>PDP-8/S Maintenance<br>PDP-10 Maintenance |
| Roger Towne | PDP-8/I Maintenance<br>PDP-8/S Maintenance<br>PDP-8 Maintenance |



While using a Computer Lab at home, Ken Brabitz, a senior Technician in Computer Special Systems, photographed it with his daughter, Stacy (14 months), probably the youngest "student" to ever receive Computer Lab training.


President Ken Olsen and Vice President Harry Mann donned softball uniforms to help launch the Digital Softball League season. Left to right are league officers Ray Melanson and Paul Dimouro, Harry Mann, and Ken Olsen.

# June Anniversaries

2 years

Albert Alexanian, Jr.
Ina Arno
Thomas Barron
Alvin Beal
Vera Bissonnette
Peggy Bracken
Clair Budnick
Michael Burke
David Carlson
Andrew Chabot
Lloyd Conklin
Robert Corbeil, Jr.
David Costello
Bruce Delagi
Gutta Edgar
Thomas Eggers
Diane Evans
Gerald Fraser
Mauritz Fredericksen
Peter Freidenfelds
John Galvin
Raymond Grundhoffer
Kenneth Gulick
Stanley Harackiewicz
Bette Jean Henry
William Hodgdon
Priscilla Laroque
Joseph McMullin
Harry Manuel, Sr.
Dennis Martineau
Cheryl Maynard
Melvin Neumann
John Pacy
Alfred Pierce
Alan Ricketts, Jr.
Malcolm Shaw
Anthony Wachs
David Wiens

3 years

William Arrington
J. Stanley Booth
Helen Bourbeau
Phil Charland
Susan Chorney
Ronald Cohen
Bruce Corbin
Roger Deakin
David Dodge
Ronald Eisenhauer
Jean Elliott

## President Olsen ARD Director

President Olsen

President Ken Olsen has been elected to the Board of Directors of the American Research and Development Corporation.

ARD, the first publicly-owned venture capital investment company, provided the financial backing required to launch DEC in 1957.

## New Offices

Digital has increased the number of offices in the United States to 24 with the opening of offices in Cleveland and Salt Lake City.

The Cleveland office is our second in Ohio, and will be responsible for covering Eastern Ohio and Erie, Pennsylvania. The Salt Lake City office helps bridge the large area between our Denver and San Francisco offices.

Cleveland is staffed by Bob Jones, Sales; Gene Yonchak, Field Service; and Evelyn Balch, Secretary. It is located at Park Hill Building, 35104 Euclid Avenue, Willoughby, Pennsylvania.

Vernon Pulter is Branch Manager for the Salt Lake City office, located at 431 South Third Street. Don Philpot, who has been working out of his house for the last year, is the field service engineer.

Our rapidly growing sales and service network now has offices in 17 states.

## June Anniversaries

3 years Continued

Robert Fitch
William Freeman
Henry Gabrish
Eileen Geraci
Warren Hamline
Irwin Jacobs
Rosalyn Jones
William Karavatos
Margaret Clark
Herve Lavoie
John Learson
Caroline Lenzi
Richard McDonnell
Joseph Madden
John Marai
Keith Nelson
Frank Purcell
Martha Sifnas
Al Walker
Edward Weingartner
Bernice Young
Joseph Zeh

4 years

Edward Bogusz
Barry Bornstein
Richard Burton
Richard Clemente
Robert Clements
James Drew
Robert Dugas
Frank Eagan
Richard Fuentes
David Gross
Richard Gruen
W. David Guerrero
Douglas Hines
Donald Leighton
Carolyn Mauro
James Milton
William Moldovan
Mario Mummolo
David Nevala
Charles Valentine
John Viscogliosi
Peter Watt
James Wengler
Arthur Zins

5 years

Philip Backholm
Lawrence Brogan
Carl Gartley
Ed Gianetto
Virginia Jeanson
John Jones
Celia Lalli
Walter Majewski
Patricia Murphy
Andre Ouelette
Frank Polucha

6 years

William Farnham
Phil Feehan
Joseph Godbout
Annette Rakip
Edmund Reilly
Lorraine Scruton
Don Zereski

7 years

David Adams
John Grieve
Chester Johnson
Herb Millman

8 years

James Cudmore
John Dinopoulos
June Oddy

9 years

Mel Arsenault
Jim Myers

10 years

Ted Johnson
Hazel Patterson
Robert Reed
Jack Smith